



# DEVELOPMENT OF MARINE RUSSIAN-NORWEGIAN TRADE FACILITIES IN NORTHERN NORWAY

Prefeasibility study



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**Cover page photo:**

*Yenisey* – newly built ice-class tanker of Norilsk Nickel  
in Murmansk port on her way to Dudinka, October 2011.  
Photo by Bjørn Franzen, Bioforsk Svanhovd.

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Development of marine Russian-Norwegian trade facilities  
in Northern Norway. Prefeasibility study

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**Summary**

This report presents the results of the preliminary evaluations of feasibilities and a potential for development of trade and transport communication between Russia and Norway with focus on possibilities and needs for increased marine infrastructure and harbors in the Northern Norway for transshipment of oil, coal and metals for international markets, and establishment of a hub for trading the goods internationally. This project discusses different aspects of establishing trade port facilities in the Northern Norway which may be of interest and benefit for all stakeholders – Russian, Norwegian and international businesses.

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# Preface

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The High North resources and the Arctic shipping routes have been among the most discussed issues on national and international political and business forums. Norway, Russia and European Union are elaborating their Arctic strategies and developing projects increasing trade and shipping activities in the North. Russia is currently shipping some 30 million tons of cargoes per year to the big harbors in Europe and North America bypassing Northern Norway. With Russia entering WTO, developing industrial projects and port infrastructure along the Northern Sea Route, the trade activities going both ways – east and west in the North will have a significant growth.

This report presents the results of the preliminary evaluations of feasibilities and a potential for development of trade and transport communication between Russia and Norway with focus on possibilities and needs for increased marine infrastructure and harbors in the Northern Norway for transshipment of oil, coal and metals for international markets, and establishment of a hub for trading the goods internationally.

This project discusses different aspects of establishing trade port facilities in the Northern Norway which may be of interest and benefit for all stakeholders – Russian, Norwegian and European/international businesses.

In this report we present information on existing and forecasted shipping activities in Norwegian and Russian High North based on development of the regions natural resources, commercialization of the Northern Sea Route and global market changes. We also look at trade mechanisms and do preliminary assessments of the future possibilities for the trade harbor in the Northern Norway. Further on, it is suggested to carry out more in-depth analyses of prospective trade directions as well logistic and infrastructure requirements taking into account different scenarios and forecasts of international trade development via these northernmost regions of the country.

This prefeasibility study was performed by Akvaplan-niva, Norway in cooperation with Gecon, Russia and financed by the Norwegian Barents Secretariat and Maritimt Forum Nord SA.

# Cargo flow to Europe and the North

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The ports Rotterdam, Antwerp and Hamburg are the major distribution hubs for overseas and European goods with total 730 million tons in 2010. They are also the largest container ports.

Rotterdam is without comparison the largest European hub with a 430 million ton cargo flow in 2010, far more than Antwerp and Hamburg combined. Rotterdam is also the largest container port with 11.5 million TEU in 2010, which is 25% more than Antwerp and 30% more than Hamburg.

In 2009 around 50% of the container flow over Rotterdam was Asian, with China as the major destination and origin. Russia counted for only 3% of this traffic, while Sweden, Norway and Finland each had a 1.5% share.<sup>1</sup>

No Scandinavian ports are ranked among the 20 largest in Europe, but Gothenburg in Sweden is the largest port in Scandinavia, both measured in total cargo flow and in containers.

The cargo flow in Europe is growing; from 2005 to 2010 the 20 major European ports had an average 10% growth in cargo distribution, while the container distribution grew by 15% TEU. In Norway as a whole, there was an average 12% rise in TEUs being distributed over the ports from 2009 to 2010.<sup>2</sup>

In 2010, the cargo turnover of the Russian seaports was 526 million tons, versus 162 million tons in 1999, and 285 million tons in 2003. Bulk cargo formed about 60% of the volumes shipped in the Russian seaports, or 314 million tons in 2010, including 210 million tons of crude oil and 103 million tons of petroleum products. Coal with 69 million tons was the biggest dry cargo shipped, cargo in containers gave 33 million tons. Export cargoes shared about 77% of total annual turnover or 404 million tons, import cargoes – 7% or 39 million tons.<sup>3</sup>

The seaports of the Northwest region – Baltic and Barents seas, take the leading position in the Russian ports cargo turnover. In 2010, the North-western seaports transshipped 228 million tons of cargo (or 43% of the Russian seaports freight turnover). Murmansk is the largest seaport in the Russian north. In 2010, it handled 25 million tons of cargo<sup>4</sup> and the total freight turnover (loading/offloading operations) amounted 33 million tons.<sup>5</sup>

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<sup>1</sup> CBS/Port of Rotterdam Authority N.V.

<sup>2</sup> Port of Göteborg, Årsstatistikk for Oslo havn 2010 og Nasjonal Containerstatistikk 2010 (utarbeidet av SSB og Larvik Havn).

<sup>3</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents region. The Norwegian Barents Secretariat and Akvaplan-niva report (p. 36).

<sup>4</sup> See previous footnote (p. 65).

<sup>5</sup> ESIMO – [www.esimo.ru](http://www.esimo.ru)

# Russian and International Trade with Raw Materials

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## Trade mechanisms

Russian export trade with raw materials is well integrated in the international trade mechanisms, which varies between the commodities, but also within one and the same commodity.

Most of the Russian raw materials are being traded through different international raw material exchanges, each specialized on different commodities. As example, much of the international non-ferrous metal is being sold through London Metal Exchange (LME), Chicago Board of Trade (CBOT) and the on-line based Intercontinental Exchange (ICE). Energy, like oil, gas and coal, is likely to be traded through New York Mercantile Exchange (NYMEX), Tokyo Commodity Exchange (TOCOM) and ICE.

Coal is also being sold in the spot-market or on other types of contracts, not involving the energy exchanges.

For ferrous metals tradition has been annual or long-term contracts between supplier and producer, directly or through a trader, outside the international exchanges. But this is practice changing significantly.

Timber and seafood are raw materials basically being sold to customer directly on annual basis (timber) or in the spot-market and on-line as auctions (seafood).

In most cases, raw materials are being traded internationally either by the raw material producer, or by professional trading houses, which often are owned by the producer. The market is shared between relatively few and large trading houses, capable of offering the customers a variety of services. The trade is also marked by large geographical concentration, like London, Geneva, Singapore, where there are suitable taxes and environment for trading, finance and recruitment.

## Crude oil and petroleum products

Russia is the world's largest oil producer and exporter with about 13% share of the global oil production. In 2010, Russia produced 505 million tons of oil, and exported 247 million tons of crude<sup>6</sup> and 131 million tons of petroleum products.<sup>7</sup>

170 million tons (69%) of crude oil exported from Russia in 2010 went to the West-European countries, where the Netherlands, Germany, Italy and Poland were the main destinations. 36

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<sup>6</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents region. The Norwegian Barents Secretariat and Akvaplan-niva report (p. 26).

<sup>7</sup> Korzhubaev, A. et al. Russia on world crude oil and petroleum product markets. Drilling and Oil magazine, May 2011.

million tons were delivered to Asia-Pacific; and 15 million tons shipped directly to the North-America.

90% of the Russian exported petroleum products go westwards. Heavy fuel oil (mazut) with 72 million tons shared 55% of the products export volumes in 2010 (most of it was delivered to European refineries), and diesel with 41 million tons had 31% share.<sup>8</sup>

Russian crude oil is to a great extent being sold in the commodity market as a derivative contract, like exchange traded futures and options, and over-the counter (privately negotiated) derivative as forwards, swaps and options. Due to the nature of the trade through international raw material exchanges, a derivative contract is often sold several times before the actual cargo is being delivered in a port, easily making the virtual volume being sold on the exchange in one day 10-15 times larger than the actual physical volume.

During the recent two years, the northern Timano-Pechora oil-and-gas bearing province and Lukoil's Varandey terminal in the Pechora Sea were main suppliers of the Russian crude oil shipped to the west along the Norwegian coast. In 2010, Varandey sent almost 8 million tons of crude for export, and in 2011 – 4 million tons, most of cargoes were transshipped at Belokamenka FSO in the Kola Bay of the Barents Sea. Small volumes of crude oil were also exported from the Ob Bay of the Kara Sea and Kolguev island in the Pechora Sea.

In 2010, Novatek, Russia's 2<sup>nd</sup> largest gas producer, exported 2.3 million tons of gas condensate, being shipped out from Vitino in the White Sea and Murmansk in the Barents Sea to the markets in Asia, USA and Europe. During first half of 2011, the exported volume was 1.5 million tons; 601 000 tons in 11 shipments to Europe, 573 000 tons in 10 shipments to Asia (via both Suez and the Northern Sea Route) and 302 000 tons in 5 shipments to USA.<sup>9</sup>

Due to limitations in Vitino port, it cannot handle ships larger than 80 000 dwt (Panamax size)<sup>10</sup>, transporting up to 60 000 tons of gas condensate. In 2011, Novatek made transshipment of total 120 000 tons of condensate, from two Panamax vessels to one larger tanker, at Sarnes (North Cape). The tanker sailed to Bangkok via NSR.<sup>11</sup>

From 2012, Novatek may move all its operations from Vitino in the White Sea, where the company built the condensate depot, to Ust-Luga in the Baltic Sea, where Novatek is constructing its own export terminal.

In 2010, there were 273 shipments with total 14.8 million tons of crude and petroleum products in transit from Russian ports in the North – Kara, Pechora, White and Barents seas<sup>12</sup>. The monthly volumes varied from around 900 000 tons in February as lowest to around 1.7 million tons in July as highest.<sup>13</sup> 87% of the westwards transit shipments departed from Murmansk<sup>14</sup>,

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<sup>8</sup> Korzhubaev, A. et al. Russia on world crude oil and petroleum product markets. Drilling and Oil magazine, May 2011.

<sup>9</sup> [www.novatek.ru/en/about/operations](http://www.novatek.ru/en/about/operations).

<sup>10</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents region. The Norwegian Barents Secretariat and Akvaplan-niva report (p. 62).

<sup>11</sup> Ulf Hagen, Manager of Tschudi Arctic Transit, 29 November 2011.

<sup>12</sup> See footnote 10 (pp. 45-70).

<sup>13</sup> The Norwegian Coastal Administration, traffic statistics petroleum transports to/from Russian ports in North.

<sup>14</sup> NDF OHQ, traffic statistics petroleum transports along the Norwegian coast, 2010.



including tankers from Vitino that entered Murmansk port for customs clearance without offloading cargoes.

In 2011, Vardø Trafikksentral (NOR VTS) registered 274 shipments with almost 12 million tons of petroleum products in transit from Russia. Russian ports in the Kara, Pechora, White and Barents seas sent westwards about 4 million tons of crude oil (versus 8 million tons in 2010), 3 million tons of gas condensate, 3 million tons of light petroleum products, and 2 million tons of heavy fuel oil.

In 2011, Rotterdam was the most important destination for Russian petroleum products shipped from the North with 36% of all vessels. Amsterdam was the second with about 17%, followed by Houston in Texas with almost 6%. There have been shipments to around 40 ports/destinations, most of them in Europe.<sup>15</sup>

Even if Rotterdam was the registered destination for more than 1/3 of the petroleum transports from the Russian North, the port is not always the final destination. It is not uncommon that a petroleum cargo shipment is being redirected to another port during the voyage.<sup>16</sup>

The oil companies have their own trading operators, or they sell through major independent energy brokers.

London and Geneva are the major European trading hubs for physical energy commodities, such as crude oil, but London is presently lacking after Geneva due to stiffer regulations in London, which makes traders moving to Switzerland. The Geneva Trading and Shipping Association claim that the city is now handling 75% of Russia's oil export.

In 2011, both state-owned Rosneft and the top-refiner Bashneft expanded their trading activities from Moscow to Geneva. Here Novatek and Lukoil have already been based for years; the first trading through its subsidiaries Novatek Gas & Power (ex. Runitek) since 2006, the latter through their subsidiary Litasco Group since 2000, being one of the major international traders of crude oil and refined petroleum products.

In Geneva, we also find Trafigura, Gunvor and Mercuria, the world's third, fourth and fifth largest oil traders.<sup>17</sup>

The energy trading company Gunvor had 65 billion USD in revenue in 2010. The company operates in the trade, transport and storage of energy products, as well as having investments in oil terminal and port facilities.<sup>18</sup>

Novatek Gas & Power in Switzerland trades globally all gas condensate produced by Novatek. 95% of the condensate is sold directly to the end-user, even if some of it is sold through agents. Around 5% of the condensate delivered to terminals in USA is being resold by the buyer.<sup>19</sup>

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<sup>15</sup> The Norwegian Coastal Administration, monthly traffic statistics petroleum transports to/from Russian ports in North.

<sup>16</sup> Statement from an international trader on 30 November 2011, based on confidentiality.

<sup>17</sup> Mikal Boe, Chief Risk Officer at Eagle Shipping International (USA) Inc., 17 November 2011; Financial Times, 22 November 2010 and 7 February 2011; OAO Novatek IFRS consolidated interim condensed financial information, 1st and 2<sup>nd</sup> Quarter 2011.

<sup>18</sup> [www.gunvorgroup.com](http://www.gunvorgroup.com)

<sup>19</sup> See footnote 16.

## LNG

In 2010, the global LNG export was equal to about 300 billion m<sup>3</sup> of natural gas and accounted 30.5% of global gas trade. Qatar had the largest output liquefying 76 billion m<sup>3</sup> of natural gas in 2010. The global LNG capacity is increasing rapidly through new projects, but by 2020 Qatar will still be in the lead. In 2010, Russia liquefied 13.4 billion m<sup>3</sup> of natural gas producing almost 10 million tons of LNG.<sup>20</sup> In 2020, Russia can produce 50 million tons of LNG when Gazprom, Novatek and Alltech projects are realized in the Barents, Pechora, Kara and Okhotsk seas.

Presently, Russia has one LNG factory located at Sakhalin in the Far East that was built within Sakhalin-2 project operated by Gazprom in cooperation with Shell, Mitsui and Mitsubishi. The LNG plant was launched in 2009, and in 2010 reached the capacity of 9.6 million tons annually.<sup>21</sup>

Three more LNG factories are being planned in the Russian North:

The Shtokman LNG plant in Teriberka east of Murmansk, being linked to the development of the large Shtokman natural gas and condensate field some 600 km offshore in the Barents Sea, is expected to be put on stream in 2017. The annual output of 23.7 billion m<sup>3</sup> of natural gas from the first stage of the Shtokman field development, which indirectly is owned by Gazprom, Total and Statoil, will be split to produce 7.5 million tons of LNG and pipe 11 billion m<sup>3</sup> of gas.<sup>22</sup> LNG will be exported to the international market by a fleet of new Gazprom-owned LNG tankers.

On Yamal, the Russian independent gas producer Novatek will construct a LNG plant together with Total. The project includes the development of the nearby Yuzhno-Tambeyskoye natural gas and condensate field. The plant is scheduled to be in production in 2016 and to reach the production target 15 million tons of LNG annually in 2018.<sup>23</sup> Export of Yamal LNG is planned on specially designed LNG tankers through the Kara Sea, west- and eastwards.

LNG production is also planned in Indiga in the Nenets region, on the coast of the Pechora Sea – southeastern Barents Sea. Companies of the Russian Alltech Group announced plans to build gas pipeline from Kumzhinskoye and Korovinskoye fields to Indiga, and a Pechora LNG plant with the total capacity of 5 million tons per annum when completed. Both gas fields are to be put in production in 2015.<sup>24</sup>

The trading of Russian LNG is likely to follow the international model. As example, Statoil considers all contracts below four years as spot contracts. These constitute 17-18% of the company's LNG contracts, being cargo sold to a terminal – where the buyer can resell to another customer if desired. The rest is long-term contracts with end-users due to the need for financial security of the huge investments required for LNG production. These contracts generally last 20 years but with prices adjusted to the market on monthly basis. As the US market in the future is going to be covered by domestic shale gas, Asia and Europe will become more important market for LNG. Already today, half of UK's gas consumption is LNG.<sup>25</sup>

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<sup>20</sup> BP Statistical Review of World Energy. June 2011.

<sup>21</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents region. Status per January 2011. Norwegian Barents Secretariat and Akvaplan-niva report (p. 39).

<sup>22</sup> See previous footnote (pp. 40, 64).

<sup>23</sup> See previous footnote (p. 40) and [www.barentsobserver.com](http://www.barentsobserver.com) 10 October 2011.

<sup>24</sup> See previous footnote (pp. 40, 57).

<sup>25</sup> Roald Maudal, Trading Analyst with Statoil ASA, 30 November 2011

## Non-ferrous metals

The world output of nickel in 2010 was 1 430 200 tons, which was an 8.5% increase from 2009. Russia and China had the largest production expansion with 20.6%, partially due to increased output of nickel-contained pig-iron in China. In addition, Norilsk Nickel of Russia has been producing nickel on a favorable tone at the Harjavalta refinery in Southwestern Finland (acquired in 2007) and increased their output in 2010 by 6.7% from that in 2009 as a whole. The expansion of nickel production at Norilsk Nickel was caused by increased supply of raw material from Southern Africa.<sup>26</sup>

Norilsk Nickel MMC is the largest mining and metal company in Russia, the world's largest producer of nickel and palladium and one of the world's largest producers of platinum, rhodium, copper and cobalt. In addition to this, the company produces a large number of other by-products, including gold, silver, tellurium, selenium, iridium and ruthenium.

The key production units are located on Taimyr Peninsula in Siberia and on Kola Peninsula in the Northwest Russia. In 2010, the proven reserves in these two regions were 473 million tons of ore, containing about 5.8 million tons of nickel and more than 8.7 million tons of copper.<sup>27</sup>

In 2010, Norilsk Nickel produced 297 000 tons of nickel and 389 000 tons of copper. The nickel output was relatively stable the last four years, while the copper output has been slowly decreasing since 2005.

In 2009, the output from Taimyr was 124 000 tons of nickel and 324 000 tons of copper, while the Kola branch produced 109 000 tons and 59 000 tons respectively.<sup>28</sup>

In 2010, during the modernization and reconstruction of the company's own terminal in Murmansk, 10 Norilsk Nickel's ships were handled there; the freight volume of transshipments was 104 000 tons. In 2011, the cargo transshipments was forecasted to grow to 200 000 tons, and up to 750 000 tons annually from 2012.

Norilsk Nickel's own vessels made 54 voyages, 12 direct voyages to European ports and one to South-East Asia.<sup>29</sup>

Like crude oil, the global trade with non-ferrous metals as nickel and copper is regulated, and most of it is being made through the international commodity/metal exchanges as derivative.

Only 6% of the production was sold via independent traders in 2010. In December same year, the commodity trader Trafigura bought an 8% share in Norilsk Nickel, but the deal is presently being disputed by Rusal, which holds 15% of the company.<sup>30</sup> Trafigura, having main office in Amsterdam, is the world's third largest independent oil trader and the second largest independent trader in the non-ferrous concentrates market.<sup>31</sup>

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<sup>26</sup> The TEX Report Ltd, 11 March 2011.

<sup>27</sup> Norilsk Nickel, Mineral Reserves and Resource Statement.

<sup>28</sup> [www.nornik.ru/en/our\\_products](http://www.nornik.ru/en/our_products)

<sup>29</sup> Norilsk Nickel, Press Release 24 March 2011.

<sup>30</sup> Norilsk Nickel Investor Fact Sheet; Norilsk Nickel Publication 17 May 2011.

<sup>31</sup> [www.trafigura.com](http://www.trafigura.com)

## **Ferrous metals/iron ore**

World production of iron ore fell by 6.2% in 2009 to 1.6 billion tons, but despite this recession, iron ore trade reached a record level as exports increased for the eighth year in a row and reached 955 million tons, up 7.4% compared to 2008. The increase was a result of a higher demand in China combined with a fall in domestic production.

The three largest iron ore companies, Vale, Rio Tinto and BHP Billiton controlled 35.4% of the global iron ore production and 61% of the world seaborne trade of iron ore in 2009.<sup>32</sup>

Russia produced 100 million tons of iron ore in 2010, a 10% increase from 2009. 20 million tons (20%) of the iron output went to export.<sup>33</sup> Almost 60% of the Russian iron ore reserves are located in the Kursk magnetic anomaly (KMA), located within the Kursk, Belgorod, and Voronezh oblasts in European Russia, and about 15% are located in the Ural Mountains region.<sup>34</sup> The Russian iron ore mines and concentrating mills controlled by 12 main iron producers and some smaller suppliers. Four large producers control around 50% of the total Russian production.

Practically, all Russian mining companies are parts of large vertically integrated metallurgic groups which are dominated by steel producers. These are Severstal, Evraz, Mechel and NLMK. The exception is Metalloinvest, where the iron ore company owns the steelmaking division.<sup>35</sup>

World crude steel production decreased in 2009 from 1 329 million tons in 2008 to 1 232 million tons, a 7.3% drop. But at the same time, the Chinese steel production increased by 12.8% compared to 2.2% growth the previous year. For 2010, the general downwards trend had reversed as world steel production was growing globally by 13% to 1 417 million tons.

Russia's steel production in 2010 was 66 942 tons, or 4.7% of the global output.<sup>36</sup> 27.2 million tons (40%) of the steel went to export.<sup>37</sup>

Iron ore has traditionally been traded different than other metals; until August 2008, it was common with closed contracts with the end-user, usually on annual basis. After August 2008, short term contracts became more common, and there is a process of including trade with iron ore into the metal exchanges.

Sydvaranger Gruve in Kirkenes, owned by the Australian Northern Iron Ltd, is presently selling 50% of the output of iron ore concentrate directly to end-users in Asia, based on long-term contracts. The other half is being sold to end-users in China through OM Holdings Ltd in Singapore, which owns 14.6% of Northern Iron Ltd and with whom the mining company has a five year exclusive marketing agreement on uncommitted iron ore concentrate in the Asian market. From 2012, the mining company is planning to increase the direct sale to 70%.<sup>38</sup>

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<sup>32</sup> UNCTAD Trust Fund Project on Iron Ore Information: The iron ore market 2009-2011, abstract.

<sup>33</sup> US Geological Survey: Mineral Commodity Summaries, January 2011; ISSB, Global Overview.

<sup>34</sup> [www.wikipedia.org](http://www.wikipedia.org)

<sup>35</sup> [www.steelonthenet.com/memo/steel\\_in\\_crisis\\_Apr\\_09.html](http://www.steelonthenet.com/memo/steel_in_crisis_Apr_09.html)

<sup>36</sup> Steel Statistical Yearbook 2011, p. 3.

<sup>37</sup> ISSB, Global Overview.

<sup>38</sup> John Sanderson, Sydvaranger Gruve, November 2011; OM Holdings Limited, January 2011; Northern Iron Annual Report 2010.

## Coal

Russia has the world's second largest coal reserves (18%) after USA, it produces over 300 million tons per year and exports 1/3 of the coal extracted – being the world's third largest coal exporter after Australia and Indonesia.<sup>39</sup>

Russian coal reserves are widely dispersed and occur in a number of major basins. These range from the Moscow Basin in the far west to the eastern end of the Donetsk Basin (most of which is within Ukraine) in the south, the Pechora Basin in the far northeast of European Russia, and Irkutsk, Kuznetsk, Kansk-Achinsk, Lena, South Yakutia and Tunguska basins extending across Siberia to the Far East.<sup>40</sup>

The principal economic hard coal deposits are found in the Pechora and Kuznetsk basins.

Major Russian coal producers are SUEZ, Kuzbassrazrezugol (KZRU), Yuzhkuzbassugol and South Kuzbass (UKUZ). Together these four companies have around 50% of the total Russian output and most of the export.<sup>41</sup>

The main markets for Russian coal are EU and China. In 2011, Russia produced 334 million tons of coal and exported 104 million tons.<sup>42</sup> 60% was exported westwards, mainly to EU, while 10% went eastwards to China.

Russia aims at boosting coal export by 50% within 2020 to meet the growing demand, which is mainly in Asia.<sup>43</sup>

Most of the Russian coal to Asia is being exported over Vostochny port, east of Nakhodka, on the eastern end of the Trans-Siberian Railway.<sup>44</sup> Around 60% of the westwards export is carried out by sea over Black, Barents and Baltic ports.<sup>45</sup>

The major Russian coal producers have been undergoing a process with restructuring into larger and vertical organizations, controlling the chain from excavation/processing to distribution.<sup>46</sup>

The coal is being sold through several Russian traders, and like the crude oil, the trading hubs for Russian coal are often located in Switzerland. An example is SUEK AG, which since 2004 has been trading both coal from its owner Siberian Coal Energy Company (SUEK) and other Russian mining companies.

In 2010, SUEK AG was trading 28 million tons of coal, or 40% of all westwards Russian export. More than 70% was sold directly to the end-user. In 2011, SUEK was expecting to export around

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<sup>39</sup> World Coal Association statistics and BP Statistical Review of World Energy June 2011.

<sup>40</sup> World Energy Council: 2007 Survey of Energy Resources, pp. 34-35

<sup>41</sup> Russia's Coal Producers: The Search For Quality, p. 10.

<sup>42</sup> RBK– Ministry of Energy of Russia statistics.

<sup>43</sup> Platts Coal, 18 April 2011: Russia aims at boosting coal exports, mainly to Asian markets.

<sup>44</sup> Reuters, 2 July 2010: Russia's Vostochny sees 2010 coal exports up 20 pct.

<sup>45</sup> [www.suekag.com/ports/seaborn](http://www.suekag.com/ports/seaborn)

<sup>46</sup> Coal Mining in Russia, market summary - [www.russiancoal.com](http://www.russiancoal.com)

8 million tons of coal over Murmansk port. The monthly export was expected to be 600 000 tons, to be transported with vessels with capacity of 65 000 tons.<sup>47</sup>

Also the major Geneva-based crude oil trader Gunvor has entered into the global coal trade, starting in 2010.

Worldwide, coal futures are being offered for sale on NYMEX and ICE. The prices in Northwest Europe have been developing from USD 36 per ton in 2000 to USD 92.50 in 2010.<sup>48</sup>

## **Phosphates**

The Khibiny Mountains in the southern part of Murmansk region is one of Russia's most important sources of economic minerals, with deposits of iron, copper-nickel, other non-ferrous and rare metals, phosphates, mica, clays and many other types of minerals. It is the largest alkaline intrusion in the world with an area of 1327 km<sup>2</sup>, and together with deposits in nearby Kovdor and Lovozero it holds 92.5% of all phosphorus reserves in Russia.

Normally, the mining output here is 11 million tons ore annually, which constitutes almost 100% of the total Russian phosphate production and about 8% of the total global production.

Two main companies are currently mining and processing the phosphates of the Kola Peninsula – Kovdorskiy GOK and Apatit JSC.

Kovdorskiy GOK is an integrated mining and processing facility and is the second largest producer of apatite concentrate in Russia; it is the only producer of baddeleyite concentrate in the world. It is owned by EuroChem, Russia's largest mineral fertilizer producer and among the top three European and top ten global producers by nutrient capacity.<sup>49</sup> In Khibiny, the company exploits deposits of complex baddeleyite-apatite-magnetite ores and low-grade iron-apatite ores. The processed outcome of commercial magnetite, apatite and baddeleyite in 2007 was 5.2 million tons, 2.5 million tons and 7.4 million tons respectively.

Apatit JSC, controlled by the Russian fertilizer giant Phosagro<sup>50</sup>, is the largest apatite-nepheline extracting and processing company in the world. It's extraction of apatite in Khibiny exceeds 80% of Russia's total output; while it's extraction of baddeleyite in the same are constitutes almost 100%. The ore is processed at nearby plants, and the annual production is 8.5-9 million tons of apatite and around 1 million tons of nepheline concentrates.

Northwest Phosphorus Company, a subsidiary of the Russian nitrogen fertilizer produces Acron, is presently planning to produce its own phosphate in the Khibiny Mountains. It intends to develop an open pit mine in the Oleniy Ruchei deposit and a first stage processing plant in 2012 with an annual output of 1 million tons of apatite concentrate.<sup>51</sup> By 2016 the output is expected to be doubled.<sup>52</sup>

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<sup>47</sup> [www.suekag.com](http://www.suekag.com)

<sup>48</sup> BP Statistical Review of World Energy June 2011, p. 30.

<sup>49</sup> [www.eurochem.ru](http://www.eurochem.ru)

<sup>50</sup> BarentsObserver, 23 November 2011.

<sup>51</sup> The Geological Society, Geoscientist Online, August 2011.

<sup>52</sup> Bloomberg News, 26 July 2011.

## Aluminum

In 2010, Russia manufactured 3 850 000 tons of aluminum, constituting 9.3% of the global production and making it the second largest producer in the world after China.<sup>53</sup>

The Russian company Rusal is the world's largest aluminum manufacturer. It also controls the main Russian deposits of bauxites, the raw material for aluminum, located in the Central Urals. Rusal also controls 15% of the shares in Norilsk Nickel, the world's largest producer of nickel.

Rusal produces and exports to 70 countries and holds 10% of the world's aluminum and alumina market. It manufactures 4.1 million tons of aluminum and 11.7 million tons of alumina annually. Sea shipments are made via 18 ports in Russia, Baltic States, Finland and Ukraine.

Rusal's smelter in Kandalaksha is the northernmost one in Russia. It manufactures 76 000 tons of aluminum annually, which is being exported over the ports of Murmansk. Another smelter in the north is located in Nadvoitsy in the Republic of Karelia

The company's priority is to sell its products through own worldwide trade representative offices, and to create long-term relationship with clients/end customers.<sup>54</sup>

## Timber

Russia is by far the world's largest log exporter, and the country's timber industry is in process of transforming to more efficient and vertical structures at the same time as changes in Russian legislation is aiming on reducing the export of round timber and increasing the export of processed wood.

The first quarter of 2011, the Russian export showed a 40% increase compared with first quarter 2010. The introduction of a log export tax on unprocessed timber, in force from 2007, resulted in a more than 50% reduction of the export between 2006 and 2010 - from 51 million m<sup>3</sup> to about 22 million m<sup>3</sup>. This tax is presently reduced and being reconsidered.

Russian export of softwood lumber is also increasing, especially to Asian countries and to Egypt. China is the largest market for Russian logs; shipments have tripled between 2007 and 2010, and first quarter 2011 showed a 150% increase compared with same period in 2010.<sup>55</sup>

Russia's forest resources are estimated to 1 183 682 hectares, and the stand of timber is estimated to 83.5 billion m<sup>3</sup>. The Far Eastern and Siberian federal districts combined hold 65% of Russia's timber, while Northwestern Federal District holds 10.4 billion m<sup>3</sup> – or 12.5% of the resources.<sup>56</sup>

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<sup>53</sup> US Geological Survey, January 2011.

<sup>54</sup> [www.aluminiumleader.com](http://www.aluminiumleader.com); [www.rusal.ru](http://www.rusal.ru)

<sup>55</sup> Wood Resources International LLC, 9 May 2011.

<sup>56</sup> Russian Timber Industry Digest Summary 2010, p. 9.

Arkhangelsk is one of the leading timber-industrial regions in the country. The region ranks second in terms of timber reserves in Northwest Russia, holding 1.8 billion m<sup>3</sup> for commercial use and processing.<sup>57</sup> The annual cut in 2007 was 10 million m<sup>3</sup>, but lack of road infrastructure is an obstacle for further utilization of the wood resources in the region.<sup>58</sup>

Arkhangelsk has three large pulp and paper mills and seven large sawmills. Sawmill #25 is the largest sawmill in Northwest Russia, being owned by the Titan Group. In 2010, the cut rate was 771 000 m<sup>3</sup> of logs, and the annual output of sawn products exceeds 349 000 m<sup>3</sup>. The company exports 99% of the production from Arkhangelsk port to several EU countries, Switzerland and Israel, using ships from Northern Shipping Company (NSC) and the Dutch company Wijnne & Barend.<sup>59</sup>

Arkhangelsk Pulp and Paper Mill (PPM) in Novodvinsk, controlled by the Austrian company Pulp Mill Holding GmbH, is also one of the leading wood chemical manufacturers in Europe. In 2009, the share of the mill in total Russian pulp and paper production amounted to 18% for containerboard, 11% for pulp and 33% for school exercise books.<sup>60</sup> In 2007, Arkhangelsk PPM exported 40% of the production.<sup>61</sup>

Timber Plant #3 (LDK-3), controlled by the Swedish RusForest AB, is one of the largest sawmills in Arkhangelsk. It has a monthly production of 8000 m<sup>3</sup> sawn wood and 1800 – 2000 m<sup>3</sup> planed products. It has a drying capacity of approximately 160 000 m<sup>3</sup> per year and export storage areas for 20 000 m<sup>3</sup> of finished products. From the company's own dock with cranes for direct loading, it is capacity for shipments of at least 400 000 m<sup>3</sup> sawn wood per year.<sup>62</sup>

The industry in Arkhangelsk is also in process of developing large scale production of wood pellets for the export market. One of the projects, being developed by LDK-3, aims to be the second largest pellets producing unit in Russia, with an anticipated output of 500 000 tons per year.<sup>63</sup>

The Republic of Karelia is another large wood processing region in Northwest Russia, having a long border with Finland in the west and seaports at the White Sea in northeast. 82% of the republic is covered with forest, and the timber reserve is estimated to 910 million m<sup>3</sup>.

In 2008, Karelia's production share in the Russian market included 24% of the paper, 35% of the newsprint, 59% of paper sacks, 6% of timber and 4% of lumber.<sup>64</sup>

Among the largest wood-processing companies are Medvezhiegosky LPKh and Segezhsky LDK, both controlled by Investlesprom, the largest forest industry company in the European part of Russia, Sweedwood Karelia, controlled by the Swedish IKEA Group, Ladsenso, controlled by the Finish Stora Enso Group and Solomensky LZ, controlled by the Russian Aspec Group.

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<sup>57</sup> Arkhangelsk oblast, 2010: Economic and Investment Potential of Arkhangelsk Region.

<sup>58</sup> Dimitriy Zylev, CFO Arkhangelsk PPM, 20 June 2007.

<sup>59</sup> [www.sawmill25.ru](http://www.sawmill25.ru)

<sup>60</sup> Press Release from Arkhangelsk PPM, 18 November 2010.

<sup>61</sup> Dimitriy Zylev.

<sup>62</sup> [www.rusforest.com/ldk-3](http://www.rusforest.com/ldk-3)

<sup>63</sup> RusForest Press Release 22 December 2010.

<sup>64</sup> Republic of Karelia for investors: Nature and Resources Potential.



## Fisheries

The Russian North contributes to 22% of the country's fisheries, while the Far East contributes with 66%. In 2010, the total Russian seafood export was 1.7 million tons of all kinds. In 2011, the export volume were on the same level.<sup>65</sup>

The Arctic Russian fishing fleet is doing commercial fishing in the Barents Sea, Norwegian Sea, in the fishing zone around Faroe Islands, the NAFO/NEAFC Convention Areas and Spitsbergen. The most important species are Atlantic cod, haddock, pollock, blue halibut, redfish, mackerel, herring, capelin and shrimps.

The catch volume varies between the years, depending on the annual quotas and the nature itself. Around the turn of the century the population of Atlantic cod in the Northwestern Basin (Norwegian and Barents Seas) was very low, giving only 430 000 tons of cod and 62 000 tons of haddock as quota in 2000, while an opposite situation in 2011 gives 758 000 tons of Arctic cod and 310 000 tons of haddock as record high quotas in 2012. Russia's share is 42% of cod and 45% of haddock.<sup>66</sup>

The Russian fishing industry in Murmansk consists of about 170 fishing- and processing companies with more than 15 000 employees. 102 companies are doing ocean fishing, while 54 companies and single-person enterprises are fishing in coastal waters. 60% of the Russian catches in the Barents Sea is done by 21 Murmansk based companies, and the region's share of the annual catches in Russia is 19%.<sup>67</sup>

The Murmansk based fishing companies are transporting significant volumes of frozen cod from the Barents Sea by ship directly to the ports of Murmansk, St Petersburg, Kaliningrad and Arkhangelsk.

In 2010, almost all the Russian quota of Atlantic cod and around 70% of the haddock was exported. The Russian export of whole frozen Atlantic cod was 172 700 tons calculated to round weight, while export of frozen cod filets was between 85 400 and 109 700 tons, depending on processing with/without skin/bones. In addition, there was also export of smaller volumes of salted, dried and minced cod.

In 2010, half of the exported whole Atlantic cod went to the Netherlands. Other large markets were Virgin Islands, Norway, UK, Germany, Portugal and Cyprus. Holland also bought nearly 60% of the frozen cod fillets, while UK and Spain also bought significant quantities.

The Russian export of frozen whole haddock was 43 057 tons calculated to round weight, while export of frozen fillets was between 27 200 and 34 000 tons, depending on the type of product. UK and Holland are the key markets for Russian haddock.<sup>68</sup>

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<sup>65</sup> Norwegian Seafood Export Council, Russian export statistics 2005-2011.

<sup>66</sup> Press Release with attachments from the Ministry of Fisheries and Coastal Affairs, 14 October 2011; Press Release from the Ministry of Fisheries, 19 November 1999.

<sup>67</sup> Ramboll: Statistics for catches of cod in the regions ICES I, IIa, IIb.

<sup>68</sup> Norwegian Seafood Export Council, Russian export statistics 2005-2011; The Norwegian Directorate of Fisheries.

The export of Atlantic cod to Norway in 2010 was 70 000 tons round weight – or 27% of the Russian quota. The volume was a slight increase compared with 2009. The export of haddock was 29 000 tons – also 27% of the Russian quota. There was no export of shrimp to Norway in 2010. The majority of the Russian fish to Norway is being discharged in the North, mainly in Kirkenes, Båtsfjord, Hammerfest and Tromsø. The rest, some 10%, is discharged in Kristiansund and Ålesund on the southwest coast. <sup>69</sup>

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<sup>69</sup> The Norwegian Directorate of Fisheries' Statistics Bank.

# The Significance of a Northern Transport Hub

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There is a general attitude that if and when the Northern Sea Route is opened and becomes accessible for commercial transit traffic between Asia and Europe – USA, there will be a need for large and efficient ports for transshipment in both ends of the route. Some think that these ports will be developed as mega-hubs where large ships will service the East and West trade, and smaller vessels would then transport the transshipment cargo North and South from these mega ports.<sup>70</sup>

On the Western end, Arkhangelsk has ambitions to fill the role as a hub for the Northern Sea Route (NSR). The regional government is an active promoter of this idea, based on the fact that the city historically has been the center of NSR. Murmansk, being the only Russian Arctic ice-free and deep-sea port where atomic ice-breaking fleet located, currently is and obviously will be in the coming future the main harbor for serving NSR

Besides basic requirements for a hub port, the way it could be developed is depending on several factors with the cargo owners and forwarders: ownership, types and volumes of cargo, frequency, types of vessels, space, required cargo handling, required distribution, and availability of sufficient and skilled labor.

For North Norwegian ports to play a role as future cargo hubs, these elements will define who can provide the key services. If, for instance, the cargo owners do not only want to redistribute the cargo from ship to ship, but also want to distribute cargo to the hinterland, the connected infrastructure (distance, railroad and quality of roads) will be a key element.

Cargo hubs generally require efficient and smooth logistics. In addition, the cargo flow passing through a hub might also create a basis for local trading, repacking, processing, retail and redistribution. This will then turn the maritime hub into a maritime trading facility.

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<sup>70</sup> An Arctic Dream – The Opening of the Northern Sea Route, p. 29.

## European Union

In 2001, the EU Commission issued the white paper "European transport policy for 2010; time to decide"<sup>71</sup>. The document did not have any Arctic perspective, having focus on reduction of CO<sub>2</sub> emission and pollution in shipping.

In 2007, the commission issued "An integrated Maritime Policy for the European Union"<sup>72</sup> where it highlighted reduction of CO<sub>2</sub> emissions and pollution by shipping among the 10 most important projects included in the action plan accompanying the document. The document also paid attention to the geopolitical implications of climate change, and the Commission announced in this context that it would present a report on strategic issues relating to the Arctic Ocean in 2008.<sup>73</sup>

In 2008, the EU commission issued "The European Union and the Arctic Region"<sup>74</sup>, which for the first time drew an EU focus on sustainable petroleum development and maritime transport in the Arctic areas of Norway and Russia by proposing to work

/.../to strengthen the foundation for long-term cooperation, particularly with Norway and the Russian Federation, facilitating the sustainable and environmentally friendly exploration, extraction and transportation of Arctic hydrocarbon resources.<sup>75</sup>

In 2009, the 2985<sup>th</sup> Foreign Affairs Council meeting in Brussels concluded that an EU policy on Arctic issues should be based on several issues, including

/.../the need for responsible, sustainable and cautious action in view of new possibilities for transport, natural resource extraction and other entrepreneurial activities linked to melting sea ice and other climate change effects.<sup>76</sup>

By the end of 2010, EU's Arctic focus was still basically an environmental and climate change focus, and less a focus on the region's commercial potential for EU. But on 20 January 2011, the European Parliament adopted the resolution "A sustainable EU policy for the High North". Here it also stresses

/.../the importance of developing new railway and transport corridors in the Barents Euro Arctic Transport Area (BEATA) to facilitate the growing need for international trade, mining and other economic development./.../

It further welcomed other cooperation initiatives on secure and safe shipping in the Arctic and on better access to the various Northern sea routes, it welcomed the IMO approved ban on the use and carriage of heavy fuel oil on vessels operating in the Antarctic Area, which was due to enter into force on 1 August 2011, and stressed that a similar ban might be appropriate in Arctic waters to reduce risks to the environment in case of accidents.

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<sup>71</sup> COM(2001) 370 final, issued 12 September 2001.

<sup>72</sup> COM(2007) 575 final, Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions, issued 10 October 2007.

<sup>73</sup> Ibid, p. 13.

<sup>74</sup> COM(2008) 763 final, Communication from the Commission to the European Parliament and the Council, issued 21 November 2008. The document was approved by the Council of the European Union on 8 December 2008.

<sup>75</sup> Ibid, page 9.

<sup>76</sup> "Council conclusions on Arctic issues", press release from Council of the European Union.

Furthermore, the resolution requested the Commission to develop the existing Inter-Service Group into a permanent inter-service structure to ensure a coherent, coordinated and integrated policy approach across policy area relevant to the Arctic, such as the environment, energy, transport and fisheries.<sup>77</sup>

Through the recent 10 years, EU has shown an increased interest in the High North and Arctic, but even if natural resources, industrial development and logistics is included in the ongoing policy making for this region, environmental issues are still dominating the union's approach.

EU's transport policies are still not having any significant High North focus; neither the 2009 "Strategic goals and recommendations for the EU's maritime transport policy until 2018"<sup>78</sup>, nor the 2009 "Progress report on the EU's integrated maritime policy"<sup>79</sup>, are dealing with shipping and maritime logistics in Arctic.

The 2011 white paper "Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system"<sup>80</sup> is lacking an Arctic transport focus, but has a focus on both reduced CO<sub>2</sub> emissions which is also highly relevant for the development of maritime transport in Arctic:

The environmental record of shipping can and must be improved by both technology and better fuels and operations: overall, the EU CO<sub>2</sub> emissions from maritime transport should be cut by 40 % (if feasible 50 %) by 2050 compared with 2005 levels.<sup>81</sup>

Even if the commission chose not to deal with maritime transport in Arctic as a part of the roadmap, the accompanying commission staff working document<sup>82</sup> is having an important remark which makes the development in Arctic highly relevant for EU:

By 2050, the entry points into European markets will multiply. Certain ports will develop or become major intercontinental hubs along the northern and southern coastlines, avoiding at the same time unnecessary traffic crossing Europe. A possible melting of the sea-ice in parts of the Arctic Sea may open new and shorter shipping routes to the Pacific. As a consequence, Arctic ports in Norway and possibly Russia may become new gateways into continental Europe.<sup>83</sup>

EU is in process of making a more detailed strategy for High North<sup>84</sup>, but even if Arctic transport and logistics yet has not been on the top of the agenda with the policy makers, there is a growing acknowledgment that the future development of this region is not only an environmental issue, but will have other impacts as well.

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<sup>77</sup> 2009/2214(INI), points 10, 13, 28 and 56.

<sup>78</sup> COM(2009) 8 final, issued 21 January 2009.

<sup>79</sup> COM(2009) 540 final, issued 15 October 2009.

<sup>80</sup> COM(2011) 144 final, issued 28 March 2011.

<sup>81</sup> Ibid, p. 8.

<sup>82</sup> SEC(2011) 391 final, issued 28 March 2011.

<sup>83</sup> Ibid, page 31. Comment No 105, chapter 2.5. "A global level-playing field for intercontinental freight".

<sup>84</sup> Oddgeir Danielsen, Director of NDPTL, 25 October 2011.

## Northern Dimension

As a consequence of EU's increasing focus on the significance of new transport corridors being developed in Arctic, the union created the Northern Dimension Partnership on Transport and Logistics (NDPTL) in 2009 under the 2006 Northern Dimension (ND) partnership with Russia, Norway and Iceland. The goal is to improve the major transport connections and logistics in the Northern Dimension region to stimulate sustainable economic growth at the local, regional and global levels by focusing on a limited number of priorities that reflects both regional and national priorities. NDPTL became operational with an office in Helsinki from March 2011.<sup>85</sup>

## Finland

Sea transport accounts for about 80 % of Finland's export and import. The Baltic Sea route is the main connection between Finland and mainland EU, and the route also carries significant and increasing volumes of transit cargo to Russia via Finland.

Finland's maritime focus is therefore naturally on the Baltic Sea and short sea shipping (SSS). In 2010 Finland issued its own Arctic strategy<sup>86</sup>. The document contains no strategies for maritime transport towards Arctic and NSR. The strategy's commercial perspectives are related to modernization and development of the NSR infrastructure and the possible development of the transport networks of Northern Finland (railroad, roads, airports) to be connected with the deep sea ports in Arctic Norway and Russia.<sup>87</sup>

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<sup>85</sup> Nordic Investment Bank, press release: Northern Dimension partnership; from concept to reality, September 2011. Nordim: "Preparing the Northern Dimension Partnership on Transport and Logistics" (final report updated June 2011).

<sup>86</sup> "Finland's Strategy for the Arctic Region" (Prime Minister's Office Publications 8/2010).

<sup>87</sup> Ibid., pp. 26-29.

# Russia

## Federal Transport Strategy

In 2008, the Russian Government adopted the "Transport Strategy of the Russian Federation for the period to 2030", elaborated and proposed by the Ministry of Transport.



**Figure 1: Transport infrastructure of Russia in 2010-2030 by the Transport Strategy 2030 (Source: Ministry of Transport of Russia).**

In the Transport Strategy – 2030, the Ministry of Transport gave three scenarios of the Russian transport system development: inertial, energy-resource, and innovation ones.

All three ways of the Russia's transport system development include:

- implementation of large transport projects ensuring resources development and hydrocarbon extraction in new production regions, like oil in Eastern Siberia and gas on the Arctic Shelf; and construction of trunk pipelines;
- transport infrastructure development for realization of transit potential of economics;
- reconstruction and building up transport infrastructure securing transportation safety, modernization of transport means;
- development of export infrastructure with focus on sea ports.

The energy-resource scenario of the transport system development also adds on among other directions:

- diversification of export routes for Russian hydrocarbon deliveries;
- increase of deliveries of processed goods, including oil products;
- establishment of specialized sea ports with logistic hubs.

The Ministry of Transport prioritized the third, innovation way of the Russian transport systems development that in addition to above mentioned elements includes:

- increase of high technological products exports;

- increased role of transport-and-logistic infrastructure in goods transportation;
- development of large transport-and-logistic and production junctions in Northwest region, Southern region and Far East;
- development of the Northern Sea Route.<sup>88</sup>

According to the innovation scenario of the Transport Strategy – 2030, the volume of annual cargo turnover in the Russian seaports should reach the level of 1025 million tons in 2030, versus 526 million tons in 2010.<sup>89</sup>

### Structure of freight turnover in Russian Western Arctic ports

In 2010, registered freight turnover of the seaports of the Kara, Pechora, White and Barents seas was 50.5 million tons, including 31.8 million tons of liquid cargoes and 18.7 million tons of dry cargoes (Note: crude oil from Varandey was handled and counted three times – shipped at Varandey in the Pechora Sea, and transshipped in Murmansk in the Barents Sea).

**Table 1: Dynamics of freight turnover in the seaports of the Kara, Pechora, White and Barents seas from 2003 to 2011, in thousand tons.<sup>90</sup>**

Port	2003	2004	2005	2006	2007	2008	2009	2010	2011
Igarka	55.6	-	48.9	36.6	59.2	58.9	-	-	2.5
Dudinka	-	-	-	-	-	2875.9	1064.7	1092.6	1102.1
Varandey	-	-	593.0	501.2	576.1	1900.7	7380.2	7510.2	4010.6
Naryan-Mar	111.5	66.9	194.2	291.1	84.3	124.8	60.5	103.1	103.8
Mezen'	12.0	13.7	33.0	44.6	24.4	23.7	22.5	23.2	14.6
Arkhangelsk	3124.4	5500.3	6469.8	5352.4	5306.6	4680.0	3256.4	3667.1	4264.4
Onega	783.6	231.5	100.3	104.3	100.6	108.7	73.7	65.3	71.1
Vitino	5714.6	3704.3	1625.7	4757.5	3942	4393.5	4358.7	4376.1	4153.1
Kandalaksha	1020.0	342.2	339.1	247.9	654.8	963.1	1060.2	862.6	916.7
Murmansk	14837.5	24759.3	28170.6	26294.2	24609.3	24832.2	35276.2	32809.2	25687.4
<b>Total:</b>	<b>27662</b>	<b>34618</b>	<b>39580</b>	<b>39636</b>	<b>37364</b>	<b>41970</b>	<b>52553</b>	<b>50509</b>	<b>42376</b>

**Table 2: Structure of freight turnover in the Russian Western Arctic ports in 2010, in thousand tons.<sup>91</sup>**

Ports	Turnover	Dry cargoes	Liquid cargoes
Dudinka	1092.6	1092.6	-
Varandey	7510.2	45.6	7464.6
Naryan-Mar	103.1	70.7	32.4
Mezen'	23.2	13.4	9.8
Arkhangelsk	3667.1	2241.4	1425.7
Onega	65.3	58.9	6.4
Vitino	4376.1	-	4376.1
Kandalaksha	862.6	-	862.6
Murmansk	32809.2	15172.5	17636.7
<b>Total:</b>	<b>50509.4</b>	<b>18695.1</b>	<b>31814.3</b>

<sup>88</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents region. The Norwegian Barents Secretariat and Akvaplan-niva report (pp. 29-30).

<sup>89</sup> See previous footnote (pp. 36-37).

<sup>90</sup> ESIMO – [www.esimo.ru](http://www.esimo.ru)

<sup>91</sup> See previous footnote.



Murmansk is the largest seaport and export harbor in the Russian North. In the recent years, it had annual freight turnover growth from 15 million tons in 2003 (handled by 5 stevedore companies) to 35 million tons in 2009 (13 stevedore companies).

The freight turnover of the Murmansk seaport had most significant increase in 2004, when FSO Belokamenka in the Kola Bay was put in operation, and in 2009, when new Varandey terminal sent 7.5 million tons of crude oil to FSO Belokamenka (see table 3).<sup>92</sup>

**Table 3: Annual freight turnover in the Murmansk seaport by all port companies-stevedores in 2003-2010, in thousand tones.<sup>93</sup>**

Company	2003	2004	2005	2006	2007	2008	2009	2010
Agrosfera	932.0	1001.9	910.4	1223.6	689.8	1085.3	737.0	994.5
Masko	70.4	118.3	142.7	24.3	0.7	4.9	0.5	-
Murmet	81.6	125.6	128.4	88.0	64.5	48.9	16.3	13.7
Norilsk Nickel branch	-	-	-	-	-	-	-	100.1
Murmansk Fishing port	1144.5	2410.1	2134.1	569.1	291.9	275.8	280.3	305.8
Murmansk Trade port	12609.0	12782.4	14551.8	14106.4	14439.1	14324.9	15117.1	12868.6
Murmansk Shipping co.	-	-	-	-	-	-	644.2	230.2
Alkor-trust	-	-	109.3	52.5	-	-	-	-
Gulfstream - KARGO	-	-	-	-	-	-	42.0	40.0
Commandit Service	-	-	-	753.9	978.1	359.4	1037.4	1220.5
Murmansk Bulker term.	-	23.3	431.8	188.3	248.9	721.3	864.7	785.6
First Stevedore comp.	-	-	-	51.8	108.4	69.5	85.0	79.4
First Murmansk term.	-	-	-	333.3	898.9	481.5	518.5	1164.1
Polyarnoe More comp.	-	-	-	-	-	-	-	0.4
Tangra-Oil	-	1589.3	1387.8	1194.1	318.7	66.7	-	-
Belokamenka FSO	-	6708.4	8278.5	7661.3	6459.3	7356.5	15839.8	14900.7
AMNGR	-	-	45.3	14.5	35.0	-	-	-
<b>Total:</b>	<b>14837.5</b>	<b>24759.3</b>	<b>28170.6</b>	<b>26294.2</b>	<b>24609.3</b>	<b>24832.2</b>	<b>35276.2</b>	<b>32809.2</b>

Coal and crude oil give most volumes in freight turnover of the Murmansk seaport. In 2010, Murmansk Trade port shipped 9.6 million tons of coal – 29% of freight turnover, and FSO Belokamenka transshipped 7.5 million tons of crude oil from Varandey (received from shuttle tankers and offloaded to line tankers) that gave 15 million tons or 46% in freight turnover. Other main cargoes were petroleum products – 2.5 million tons or 8%, and mineral fertilizers – 2.4 million tons or 7% of Murmansk freight turnover in 2010 (see table 4).

<sup>92</sup> ESIMO – [www.esimo.ru](http://www.esimo.ru)

<sup>93</sup> See previous footnote.

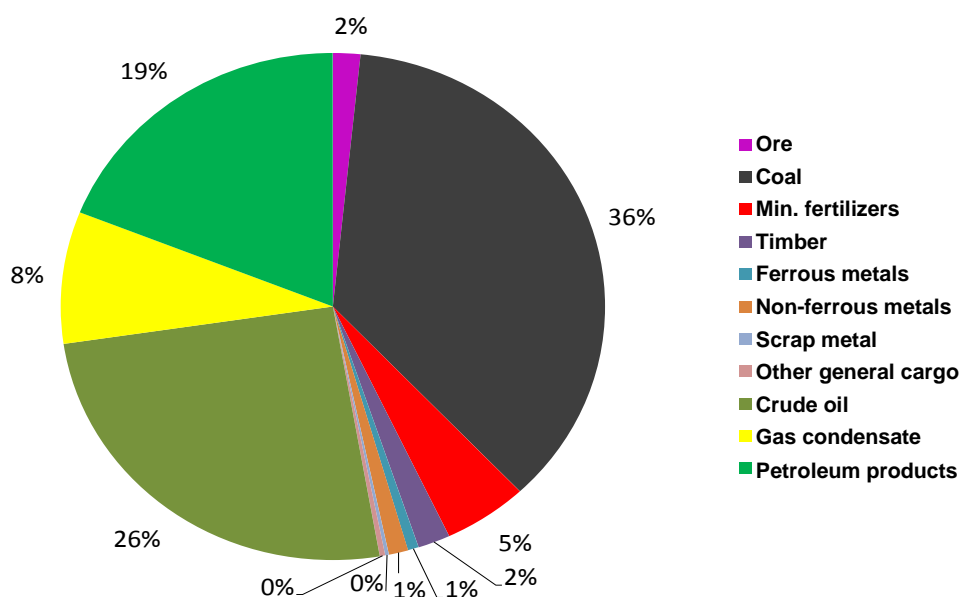
**Table 4: Freight turnover of the Murmansk seaport in 2010 by stevedore companies and types of cargo, round in thousand tons.<sup>94</sup>**

Company	Dry cargo				General cargo					Cnt	Liquid cargo	
	1	2	3	4	5	6	7	8	9	10	11	12
Agrosfera	-	-	995	-	-	-	-	-	-	-	-	-
Arktik-neft	-	-	-	-	-	-	-	-	-	-	106	-
Murmet	-	-	-	-	-	-	14	-	-	-	-	-
Norilsk Nickel	-	-	-	-	-	2	-	-	1.5	97	-	-
Murmansk Fishing p.	-	-	-	-	-	-	-	258	32	-	-	16
Murmansk Trade p.	737	9641	1360	127	92	341	71	-	45	456	-	-
Murmansk Shipping c.	-	-	-	-	-	-	-	-	-	-	105	125
Gulfstream - KARGO	-	-	-	-	-	-	-	34	6	-	-	-
Commandit Service	-	-	-	-	-	-	-	-	-	-	-	1221
Murmansk Bulker T.	786	-	-	-	-	-	-	-	-	-	-	-
First Stevedore Comp.	-	-	-	-	-	-	73	-	7	-	-	-
First Murmansk Term.	-	-	-	-	-	-	-	-	-	-	-	1164
Polyarnoe More comp.	-	-	-	-	-	-	-	0.4	-	-	-	-
Belokamenka FSO	-	-	-	-	-	-	-	-	-	-	14901	-
<b>Total:</b>	<b>1522</b>	<b>9641</b>	<b>2354</b>	<b>127</b>	<b>92</b>	<b>343</b>	<b>157</b>	<b>292</b>	<b>92</b>	<b>553</b>	<b>15112</b>	<b>2525</b>

Types of cargo: 1 – ore, 2 – coal, 3 – mineral fertilizers, 4 – other dry cargoes; 5 – ferrous metals, 6 – non-ferrous metals, 7 – scrap metal, 8 – refrigerated cargo (fish and seafood), 9 – other general cargo; 10 – cargo in containers; 11 – crude oil, 12 – petroleum products.

### Export cargo from the Russian Barents Region ports

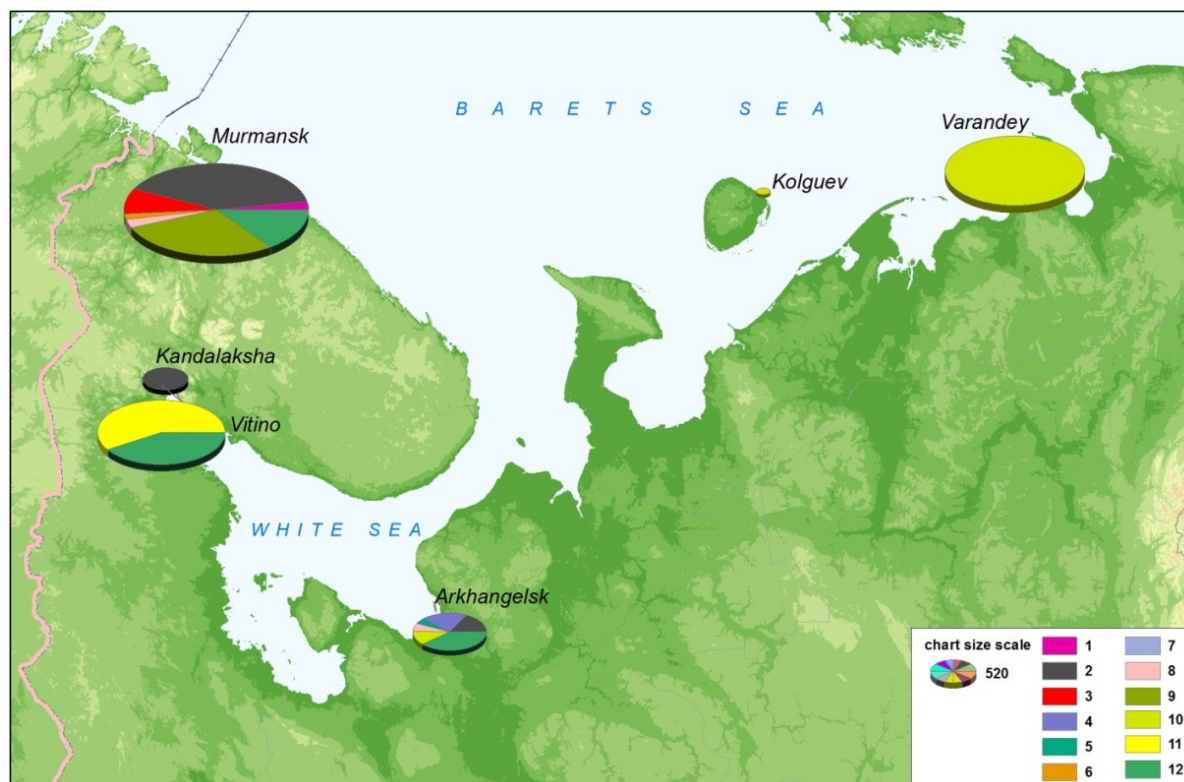
Sea ports and terminals of the Barents, White and Pechora seas, shipped 29.7 million tons of cargo for export in 2010. Liquid hydrocarbons (crude oil, gas condensate, refined products) shared 53% of exported cargo; coal – 36%; mineral fertilizers – 5%; ore and metals – 4%; timber and processed wood – 2% (see figure 2).



**Figure 2: Structure of freight turnover in the Russian Barents region ports in 2010.**

<sup>94</sup> ESIMO – [www.esimo.ru](http://www.esimo.ru)

The year of 2011 showed similar to 2010 structure of cargo export. Most of cargoes shipped for export in the Russian Arctic ports are handled in the port of Murmansk. Spatial distribution of export freight turnover is shown on the map (see figure 3).<sup>95</sup>



**Figure 3. Spatial distribution of export cargoes shipped in the Russian northern ports.**

Legend: 1 – ore; 2 – coal; 3 – mineral fertilizers; 4 – timber; 5 – ferrous metals; 6 – non-ferrous metals; 7 – scrap-metal; 8 – other general cargoes; 9 – oil shipped for export; 10 – export oil sent for transshipment; 11 – gas condensate; 12 –petroleum products; 520 – chart size scale of 520 thousand tons of cargo.

(Note: export crude oil offloaded in Varandey was transshipped in the Kola Bay at FSO Belokamenka)

## Coal export

Coal export volumes via the Russian northern ports (Murmansk, Kandalaksha, Arkhangelsk) were on the level of 11-14 million tons annually in 2009-2011 (see table below).

Port	2009	2010	6 months 2011
Murmansk	12240	9641	5302
Kandalaksha	1060	787	431
Arkhangelsk	233	347	121

The Murmansk trade seaport receives 90% of coal from Kemerovo region (about 70% delivered by SUEK), the rest comes from Novorossiysk region, Republics of Khakasia and Buryatia, and

<sup>95</sup> Kozlova, O. and Grigoriev, M. (2011) Evaluation of prospects for cargo flows via ports of the Barents and the White seas. Gecon report.

from Irkutsk region. Coal is exported to Great Britain (60%), Spain and Belgium, with single shipments to Switzerland, Germany and Norway.<sup>96</sup>

The Kandalaksha trade seaport in the White Sea receives coal by railway from the Kemerovo region with 2/3 of deliveries by TALTEK JSC. Coal is from Kandalaksha to the Great Britain and the Netherlands.

The Arkhangelsk port gets coal from the Kemerovo region delivered by South Kuzbass JSC, and sends cargo to ports of the Great Britain (about 50%) and Belgium, with single deliveries to Denmark and the Netherlands.<sup>97</sup>

### **Mineral fertilizers export**

The terminal of Agrosfera JSC in the Murmansk seaport receives mineral fertilizers from Apatit JSC and Kovdorsky GOK in the Murmansk region, Balakovo factories in the Saratov region, Voskresensk in the Moscow region, and Cherepovets in the Vologda region.

The recent five years, the Agrosfera terminal exported between 700 000 and 1.3 million tons of mineral fertilizers annually – 994 500 tons in 2010, and 649 600 tons for the first 6 months of 2011.

Apatite concentrate is shipped to Lithuania, Finland, Norway, Japan, Israel, the Netherlands and other countries.<sup>98</sup>

### **Crude oil export**

Crude oil forms about one quarter of all export cargoes shipped in the ports of the Russian North. In 2010, 7.5 million tons of crude were exported, most oil came from the northern fields of the Nenets region via Lukoil's Varandey terminal in the Pechora Sea and FSO Belokamenka in the Kola Bay of the Barents Sea. Crude oil is also delivered to Belokamenka from RITEK (Lukoil's subsidiary) fields in the north of the Western Siberia via the STS terminal in the Ob Bay.

Oil extracted at the Kolguev Island in the Pechora Sea is exported via STS terminal of the Murmansk Shipping Company (RPK-1) in the Kola Bay. Belokamenka and RPK-1 ship crude oil to 100-120 thousand dwt tankers that deliver load to ports in Europe, where Rotterdam is dominating as the port of destination, and the Northern America.<sup>99</sup>

### **Gas condensate export**

Two ports in the White Sea – Arkhangelsk and Vitino were shipping gas condensate for export. The recent years, condensate comes to Vitino only, and since 2008 the share of gas condensate in the Vitino cargo flow is increasing – 57% in 2010, and 67% in 2011.

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<sup>96</sup> Kozlova, O. and Grigoriev, M. (2011) Evaluation of prospects for cargo flows via ports of the Barents and the White seas. Gecon report.

<sup>97</sup> See previous footnote.

<sup>98</sup> See previous footnote.

<sup>99</sup> Bambulyak, A. and Frantzen, B. (2011) Oil transport from the Russian part of the Barents Region. Norwegian Barents Secretariat and Akvaplan-niva report.

Condensate of Novatek Company, around 2.5 – 3 million tons annually, is delivered to Vitino by railway from Purovsky refinery in Yamal-Nenets region.<sup>100</sup> Novatek has built its own terminal with the gas condensate storage in Vitino for shipping condensate for export.<sup>101</sup> The company is also completing construction of a gas condensate terminal with the capacity of 6 million tons per year, that corresponds to the full capacity of the Purovsky refinery, in Ust'-Luga port in the Baltic Sea. The first line of the terminal is to be launched in 2012 and the second one should come on stream in 2015.

Gas condensate produced by Norilsk Nickel subsidiaries, Norilskgazprom and Taimyrgaz, in Taimyr in the north of the Western Siberia – some 50-100 thousand tons per year, is shipped for export via Dudinka port in the Yenisey River. In 2011, Norilsk Nickel got a new 20 000 dwt ice-class tanker *Yenisey* (see cover page photo) that in November 2011 delivered its first gas condensate load from Dudinka to Porvo in Finland.<sup>102</sup>

### **Petroleum products export**

Russian northern ports were sending between 4 and 6 million tons for export annually during the recent two years. In 2010, there were shipped 3.2 million tons of petrol; 2 million tons of heavy fuel oil (mazut); 265 000 of diesel; and 190 000 tons of naphtha (kerosene). Oil products are delivered by railway to the ports of Arkhangelsk (Rosneft terminal in Talagi) and Vitino in the White Sea; and Murmansk – The First Murmansk Terminal in the Fishing port and Commandit Service terminal near Severomorsk in the Kola Bay of the Barents Sea.

Commandit Service terminal is specialized on shipping heavy fuel oil of Gazpromneft (96% in 2010) that comes from Omsk refinery in the Western Siberia. Heavy fuel oil is shipped via FSO to 50 000 tons tanker that deliver load to the Netherlands.

The First Murmansk Terminal in the Fishing port receives petrol from refineries in middle Russia – Republics of Bashkortostan and Tatarstan, and Saratov region; and from Khanty-Mansiysk okrug in the Western Siberia. Petrol is exported by 30-40 thousand dwt tankers. Vitino port gets petrol from refineries in Yaroslavl near Moscow, Tyumen and Omsk regions in Western Siberia (about 50% from Omsk refinery), and ships to 40-60 thousand dwt tankers that deliver export cargo to the European ports.

RN-Arkhangelsknefteprokukt terminal in Talagi receives petrol from Saratov, Yaroslavl and Omsk regions, and about 75% comes from Antipinsky refinery in Tyumen region. Petrol is shipped to 30 000 dwt tankers of Rosneft and delivered to the Netherlands. Heavy fuel oil comes to Talagi from the republics of Komi (Lukoil's refinery in Ukhta), Mariy-El (Mariysky refinery), Tatarstan (Taif-NK), and Tyumen region (Antinipnsky refinery).

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<sup>100</sup> See previous footnote.

<sup>101</sup> See previous footnote.

<sup>102</sup> Kozlova, O. and Grigoriev, M. (2011) Evaluation of prospects for cargo flows via ports of the Barents and the White seas. Gecon report.

## Prospects for the Russian Arctic Port developments

Increase of freight turnover and export capacities in the Russian Arctic ports in the coming decade is, first of all, connected to development of big oil-and-gas projects in Yamal in the north of Western Siberia, Nenets region in the northeastern Europe and continental shelf in the Kara, Pechora and Barents seas.

There are many big and smaller projects for building new port facilities in the Russian Arctic, some of them are under implementation, others are frozen. The table 6 below shows ones that were officially announced.

**Table 6: Existing (2010) and prospected (2020) freight capacities of the main Russian Arctic ports and terminals, in thousand tons.**

<b>Ports and terminals</b>	<b>2010</b>	<b>2020</b>
Kara Sea:		
Dudinka	1 800	2 000
Novyi Port	-	1 000
Sabetta (Yamal LNG)	-	20 000
Kharasavey	100	20 000
Pechora Sea:		
Varandey	12 500	12 500
Prirazlomnaya (oil platform)	-	7 000
Naryan-Mar	500	500
Indiga (Pechora LNG)	-	5 500
White Sea:		
Arkhangelsk	12 500	30 000
Belomorsk (coal terminal)	100	9 000
Vitino	11 000	12 000
Kandalaksha	1 500	1 500
Barents Sea:		
Teriberka (Shtockman LNG)	-	10 000
Murmansk	40 000	80 000
Mokhnatkina Pakhta	2 500	5 000
Pechenga	-	65 000

Among the above listed ports, Murmansk is the only acting multi-purpose deep-sea port in ice-free area; which is connected to motor way and rail road, and can serve large vessels.

# Norway

## National transport strategies

Norwegian authorities have developed several plans and strategies for development of a more efficient and environmental friendly maritime transport and logistics, and some of them have a focus on the development of maritime transport in Arctic.

The key instrument is the National Transport Plan (NTP), and the present plan covering 2010-2019<sup>103</sup> is aiming on strengthening the maritime transport to meet the growing transport challenges Norway is facing, and to reduce the CO<sub>2</sub> emissions from transport in accordance with the EU targets.

Supported by a new Law about ports and waters<sup>104</sup>, this has brought significant changes in the maritime framework to support the development of more efficient port structures and better logistic chains, the government has defined 31 ports as national hubs. 25 have good connections to the European road grid, while the other six are sea based terminals. These ports are also connected to the national maritime grid, covering the coast from Svinesund in south to the Russian border in the north.

Nine of the national hub ports are located in north Norway (see figure 4):

1. Mo i Rana
2. Bodø (Bodøterminalen)
3. Narvik (Fagernes)
4. Harstad
5. Tromsø (Breivika)
6. Alta
7. Hammerfest (Polarbase and Melkøya)
8. Honningsvåg
9. Kirkenes (Kirkenes port)

The governments new port structure also introduces "particularly designated ports" to be selected among the hub ports.<sup>105</sup> Their criteria were established in the previous NTP (2006-2015):

- Cargo volume; the ability to handle the transport demand in the area.
- Organization/cooperation; cooperation between business, private port actors and other public port facilities. Presence of an organization structure which allows necessary development and cooperation with other actors.
- Infrastructure; access to the port from sea and land, the port's access to area in short and long perspective, environmental issues related to operations, neighborhood issues, technical equipment of the port and control-/preparedness actions.
- Planning status; the ports must have developments plans anchored in approved local- and regional spatial plans and transport plans. <sup>106</sup>

<sup>103</sup> St.meld. nr. 16, 2008-2009, Nasjonal transportplan 2010-2019.

<sup>104</sup> Law 2009-04-17 No. 19: Lov om havner og farvann.

<sup>105</sup> Ibid., p. 180.

<sup>106</sup> St.meld. nr. 24 (2003-2004): Nasjonal transportplan 2006-2015, pp. 46-47.

Based on NTP and the new law on ports and waters, the government has chosen five "particularly designated ports". In north Norway it is only Port of Tromsø having received this status.<sup>107</sup>

By this definition, the government is now in position to involve actively in the development of these ports by instructions and premises considered necessary for the port's abilities to meet the national transport policy targets. This includes involvement in how the port is owned and organized.

The policy aim is to create a port structure which is promoting intermodality and increased maritime transport.<sup>108</sup> This policy is also refined in the process with the next NTP (2014-2023). Here Norwegian import and export is expected to grow with 35-40 % in tons/km by 2040, and sea transport is expected to continue to dominate with total 82 % of transported volume (tons) and 92 % of tons/km.

One of the suggested actions will be the strengthening of some ports as logistic centers to offer the shipowners and forwarders more variety of services to attract more customers and goods. Tromsø seems presently to be the only cargo hub in north Norway which might obtain such priority.<sup>109</sup>

In 2006, the Norwegian government issued a first High North strategy, which boosted the national focus on the perspective development of High North. Even if the strategy has a strong focus on knowledge production and

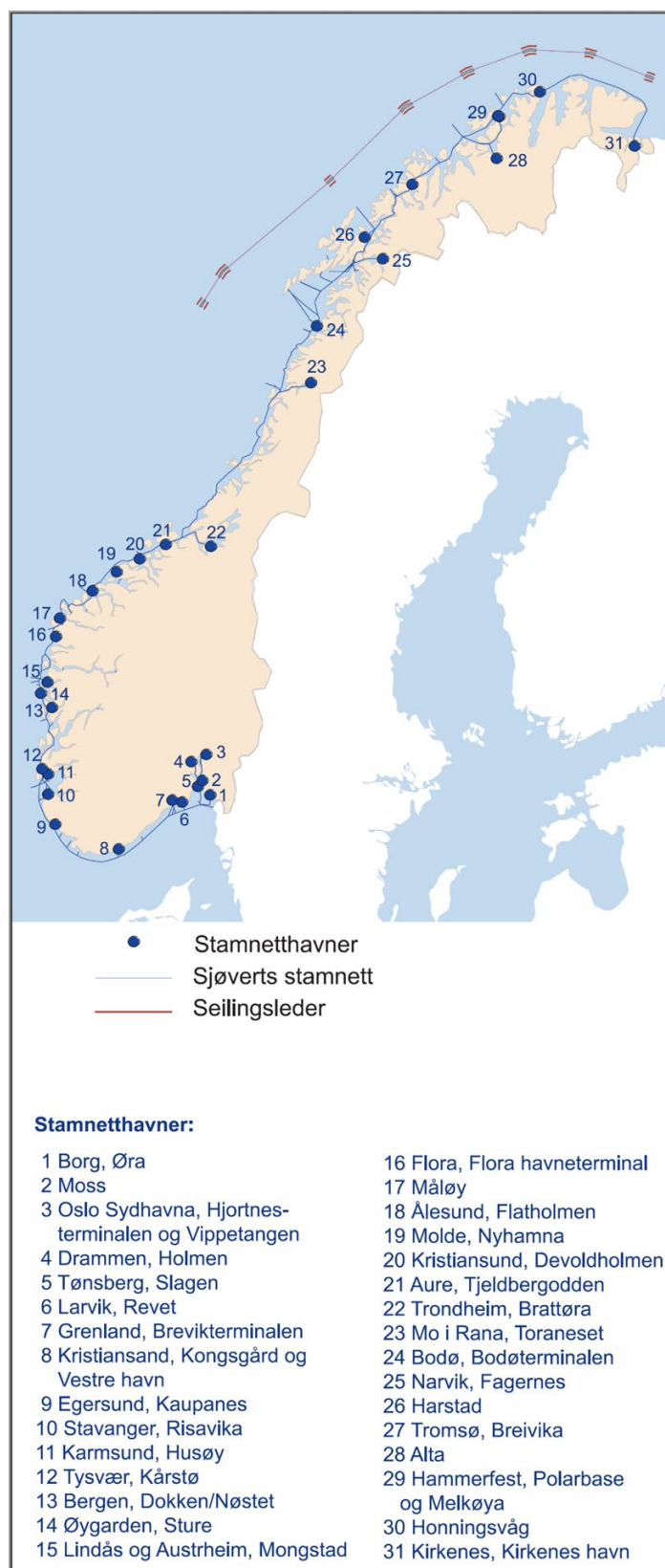


Figure 4. Hub ports in Norway. National Transport Plan.

<sup>107</sup> Decision by the Ministry of Fisheries and Coastal Affairs on 21 December 2009.

<sup>108</sup> St.meld. nr. 16, 2008-2009, Nasjonal transportplan 2010-2019, p. 98.

<sup>109</sup> Nasjonal transportplan 2014-2023, hovedrapport utredningsfasen, 1 February 2011, pp. 15, 34-36 and 50-53.



competence development as a fundament for further strategies and actions, the strategy also carries focus on economic development. On maritime transport/infrastructure, the government is making the following commitments:

1. The government is supporting the initiative on an international transport corridor over Narvik port. The corridor, which is named North East West Freight Corridor, consists of railroad connection between Central-Asia and Narvik and boat connection further from Narvik to North-America. The corridor will connect Narvik port and Ofotbanen to the Russian railroad grid via Sweden and Finland./.../<sup>110</sup>
2. To strengthen the maritime infrastructure in North-Norway the government will facilitate that ports, supply bases and yards on Norwegian side of the border also can serve activities and commercial interests on Russian side; whether it concerns supplies of goods and services, maintenance or repairs.<sup>111</sup>

In 2009, a second High North Strategy was launched, pointing on perspectives, challenges and possibilities in the North. Here the government, among other things, stressed as particularly important that:

/.../Norwegian ports in the north are positioning and develop adequate cooperation to attract activities. The State will monitor the progress, and if necessary contribute to prepare the coastal infrastructure for the increased activity./.../<sup>112</sup>

The government followed up both the 2006 and 2009 High North Strategy by specific actions in NTP 2010-2019, where High North and following up the High North Strategy is being covered by a sub-chapter.<sup>113</sup>

Here the government makes the following statement regarding sea transport:

It should be made visible towards other countries and towards the international maritime society that Norway takes responsibility connected to increased maritime activity in north. It is important that Norway can offer ports and port services in Finnmark, which covers both preparedness and the need for service ports for a possible increased maritime activity. Norwegian ports in north should position themselves and develop adequate cooperation to attract activities./.../<sup>114</sup>

Through the High North strategies and NTP, a number of analytical studies were processed. Three studies covered status and challenges with ports, maritime infrastructure and navigation in Norwegian High North. Among the conclusions provided, the following are considered as relevant for our study:

1. Among the existing ports in eastern Finnmark, only Kirkenes can meet the requirements for a future petroleum base without significant development. Another five ports might meet the requirements for service- and supply ports given additional investments in infrastructure.<sup>115</sup>
2. The navigational conditions for larger ship which need depth from 11 to 28 m to - and inside - all national hub ports in north Norway meets the requirements from coastal

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<sup>110</sup> Regjeringens nordområdestrategi, 1 Desember 2006, pp. 56-57.

<sup>111</sup> Ibid., p. 60.

<sup>112</sup> Nye byggesteiner i nord – neste trinn i Regjeringens nordområdestrategi, pp. 21-22.

<sup>113</sup> St.meld. nr.16, 2008-2009, Nasjonal transportplan 2010-2019, 8.4 Nordområdene og oppfølging av nordområdestrategien, pp. 130-137.

<sup>114</sup> Ibid., p. 134.

<sup>115</sup> Kystverket: Mulige oljebasehavner i Øst-Finnmark. Vurdering av lokaliteter (February 2010).

authorities. In general, these ports do also have potential for further expansion and development.<sup>116</sup>

3. Most of the northern hub ports operate without any particular limitations. Only Bodø has limitations on the largest vessels due to shallow entrance, but a deepening at two spots will take place during 2014-2019.<sup>117</sup> The port has good space, and there are plans for future expansion on Lille Hjertøya. The ports Kirkenes, Honningsvåg and Hammerfest have limited space, but Kirkenes is in process of expanding into Langfjorden and Hammerfest will have expanded the port by 2015. In Tronsø road connections to Breivika and the Tønsnes (future offshore and industry base, presently under construction) are considered as bottlenecks.<sup>118</sup>

In November 2011, the government finally issued its visions and short-term actions regarding the High North as a Message to the Parliament.<sup>119</sup> It contained all key elements from the three previous documents, and continued having a focus on the development of maritime transport, maritime business development and infrastructure in the north. Several specific development projects are mentioned in the document, incl. the NEW-project in Narvik and the efforts by Port of Tromsø to position itself toward the offshore sector. It is therefore expected that these elements also will be included in the priorities of the upcoming NTP for 2014-2023.

On national level, there is a clear political focus on establishing suitable frame conditions and promotion maritime transport by strengthening the port infrastructure, the port operations and the connections between ports and other transport infrastructure in Norway. The general aim is both to meet the transport challenges related to the growth in import/export of goods and to meet the requirements within EU to reduce the Co2 emission by 40-50 % in a relatively short time perspective.

In North Norway this policy also has an additional dimension as both Norway, Russia and EU are developing their Arctic strategies based on the perspective of extensive future utilization of natural resources, climate change and development of the Northern Sea Route as a possible new corridor for international maritime transit transport between Asia and Europe as well as a corridor for transport of attractive natural resources from Arctic Russia to the Western markets. An economic boost in the NW Russian regions based on these developments will furthermore create a good basis for a significant growth in cross-border business cooperation and trade High North.

These additional dimensions make ports and maritime infrastructure in Arctic Norway particularly important in a long-term national perspective.

So far, the port functions has been mostly considered in perspective of being capable of handling expected growth based on existing markets, existing market development and existing trade lanes. This includes the ports capabilities to handle and to prepare for increased production and handling of petroleum from Norwegian Arctic Shelf, even if future development of offshore production on western part of Russian Arctic Shelf also has been a part of the considerations.

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<sup>116</sup> Kystverket: Maritim infrastrukturrappport Svalbard, Finnmark, Troms og Nordland. – Mulige farleder for store skip (31 March 2011).

<sup>117</sup> St.meld. nr. 16, 2008-2009, Nasjonal transportplan 2010-2019, p. 259.

<sup>118</sup> Kystverket: Stamnettutredning 2011.

<sup>119</sup> Meld. St. 7 (2011-2012) Nordområdene. Visjon og virkemidler.

Little attention has been paid to the possibilities that the cargo flow through north Norwegian ports in the future could grow significantly by getting a share of both the existing cargo flow from Russia to EU and the US markets and future cargo flows, which is likely to be both larger and being more diversified. An opening of the NSR for commercial international traffic during the summer months might also represent an opportunity for an active approach by ports and traders.

## **Nordland**

Nordland County's Development Program (to be revised) is having a priority on "problem areas and opportunities with port- and terminal operations and intermodality" as well as "solution models for cooperation/competition with port-/terminal operations and intermodal transports".<sup>120</sup>

## **Troms**

In Troms, the visions of the regional administration is based on a view that Arctic represents opportunities and maritime sector represents the key:

To safeguard national interests and promote regional based value adding in the High North, it must be invested in national and international transport corridors. It is important to contribute to development and cooperation connected to transport- and logistic hubs in the High North. From old times there is a trading road stretching along the continental coast via the North Sea with legs east- and westwards and further along the Norwegian coast to Northwest-Russia. It is of great importance, also today, to develop the present sea based transport system for the same regions. Transport- and logistic structures in Europe and the Nordic countries are in process of development. Important transport corridors are prioritized and the hubs are regionalized. For Troms it is also very important to secure the transport grids eastwards to Finland and East- and Central-Europe. All transport (road, sea, air and rail) must be seen in context.<sup>121</sup>

## **Finnmark**

In the Regional Development Plan for Finnmark County there is a general focus on the importance of viewing transport in context to increase the competitiveness of maritime transport, and to continue to develop the ongoing cooperation with Russia to solve common infrastructure challenges.<sup>122</sup>

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<sup>120</sup> Nordland fylkeskommune: Utviklingsprogram Nordland 2008-2011, p. 19.

<sup>121</sup> Troms fylkeskommune: Troms fylkesplan 2010-2013, s. 66.

<sup>122</sup> Regional Utviklingsplan for Finnmark fylke, 2010-2013, s. 6 og s. 20. Planens politiske prioriteringer knyttet til nordområdesatsing (s.21) er basert på Regjerings nordområdestrategi og NTP 2010-2019., og en legger her til grunn at det må "...bevilges ekstraordinære statlige midler til utredninger og infrastrukturiltak for å utvikle konkrete områder i Finnmark til en nasjonal næringsstrategisk plattform i nord."

## Relevant Norwegian Ports, Plans and Capacities

**Table 7: Relevant types of vessels for port calls**<sup>123</sup>

Type of vessel	Loading capacity (dwt)	Length (m)	Width (m)	Max depth (m)
VLCC (Very Large Crude Carrier)	300 000	344	50	17
Tanker for intercontinental traffic	100 000	265	38	14
Feeder vessel for oil from offshore installations	50 000	240	30	12
Supply ship	2 000	94	18	6,5
LNG tanker	73 000 m3 (max 140 000 m3)	290	48	12
Container ship	5 000, 547 TEU	116	19	7,0
RoRo for cargo	7 000	143	21	5,4
Passenger ferry	15 000	250	30	7,5
Hurtigruten		136	22	5
Cruise ship	45 000	300	31	10
Fishing vessel		25	7	3

The Norwegian port structure, which is based on parameters like cargo volume, capacity, connected infrastructure etc. is also defining a public port's national priority regarding investments. It is therefore natural to look at the "hub ports" within this structure when considering which north Norwegian ports could manage to host or develop to a maritime trading facility targeting export from Russia and in perspective transit cargo flow over the NSR.

These waters and ports have no depth limitation; have good maritime conditions and good regularity.

**Table 8: Navigation and traffic at hub ports in north Norway**<sup>124</sup>

Ports	Sailing depth (m)		Anchoring	Access to space onshore	Traffic development (loaded/offloaded tons)		
	28	20			2004	2010	Changes %
Mo i Rana	+		+	Good	3 648 194	3 438 173	-6
Bodø	+		+	Good	661 157	827 645	25
Narvik	+		+	Good	15 568 790	17 583 344	13
Harstad	+		+	Good	473 169	411 779	-13
Tromsø	+		+	Good	767 082	1 181 763	54
Alta	+		+	Good	701 000	600 000	-14
Hammerfest		+	+	Good	535 131	10 212 835	1909
Honningsvåg	+		+	Good	204 832	102 600	-50
Kirkenes	+		+	Good	94 842	1 662 169	1753

Narvik is mainly a loading port for export iron ore from Sweden. The volume of loaded dry bulk in 2010 was 17 033 013 tons – or 97 % of the total cargo flow.

Hammerfest has been developed as a main supply base for the petroleum activities on the Norwegian shelf of the Barents Sea. Statoil's Snøvit LNG factory is also located here. In 2010 about 50 % of the port's cargo flow was loaded liquid bulk.<sup>125</sup>

In Kirkenes, the large increase in cargo flow is a result of the reopening of the Sydvaranger iron mines in 2008.

<sup>123</sup> Mulighetsstudie for Kirkenes Havn, p. 31.

<sup>124</sup> Maritim infrastrukturrapport Svalbard, Finnmark, Troms og Nordland, s. 5., Stamnettutredning 2011, s. 78 og SSBs Havnestatistikk.

<sup>125</sup> SSB Havnestatistikk, tabell 439.

## Mo i Rana

Mo i Rana is the industrial hub of north Norway with one of the country's largest industrial park.

**Table 9: Quays and back area in Mo i Rana<sup>126</sup>**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Max capacity (tdw)	Area (m2)	Remarks
Rana Industriterminal	410	70-100	8	180	20000	250000	ISPS-approved. Discharging/loading and storage
Rana Gruber	260	70	11,4	250	80000	30000	ISPS-approved. Iron Ore Terminal
Bulkterminalen	129/80	*)	11/7,3	220	60000	40000	ISPS-approved. Bulk cargo and tanker terminal
Toraneskaia	330	50	8-12	180	20000	50000	ISPS-approved. General cargo and container terminal

\*) Loading and discharging on both sides; pier with two cranes for transshipment.

Connected infrastructure:

Mo i Rana is connected both to the European road grid through E6 through Norway and E12 to Sweden. It is also connected to the national railroad grid.

There is a STOLport with 799 m runway located at Røssvoll, 10 km NE of the town. It is planned to close it down to build a new and larger airport at Hauan, a few km further to the east.

## Bodø

Bodø is Norway's largest intermodal hub on transfer of containers between ships and railroad, and it is without comparison north Norway's largest container port. This is because Bodø effectively is prolonging the Norwegian railroad grid (Nordlandsbanen) by ship within the region, and to the large northern regions Troms and Finnmark.<sup>127</sup>

Port of Bodø presently has 1 460 meters of public quays. The railroad terminal, the port terminal, the ferry terminal, cargo truck terminal, cold store, store hotel and other storehouses are all located within a 500 meter radius.

**Table 10: Quays in Port of Bodø<sup>128</sup>**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
R-07 Terminalkai	350	15	8,5	300	9000	ISPS-approved. Depth planned increased to 10,5 m.
R-09 Klossen	35	49	9	120	3900	ISPS-approved.
R-10 Terminalkai Nord	47	15	9	70	3600	ISPS-approved.
Terminalkai Sør	210	15	10	210	15000	New ISPS-approved quay being built 2012-2014.
B-02 Hansen/Dahl-kai	125	12	8,5	150	1500	ISPS-approved.
R-08 Ro-Ro	25	20	7,5	300		ISPS-approved. Connected to R-07 and used together.

<sup>126</sup> Harbor Master Per Anders Nygaard, 21 November 2011.

<sup>127</sup> NTP 2014-2023 Effektive godsknutepunkter, p. 84

<sup>128</sup> Port of Bodø KF, 29 November 2011.

There is a significant logistic environment operating in Bodø. On logistic sector, the port's strategy plan calls for:

- Upgrading of buildings, expansion of terminal quay "Nord" from 47 to 250 meter
- Preparing of additional space for containers and general cargo at terminal quay "Nord"
- Improvement of infrastructure in the port by new roads and loading gates for the railroad terminal.

The port is also facilitating a process of developing an updated municipal strategy for industry, oil and gas.<sup>129</sup> Port of Bodø is a part of an alliance with Port of Hammerfest and Port of Kirkenes to be in better position to benefit from maritime traffic connected to future petroleum activities and Northwest Russia.<sup>130</sup>

Connected infrastructure:

Bodø is connected to the European road grid by Rv 80, connecting with E6 at Finneid, There is also a connection with the European grid in Sweden from E6 to Rv 77 at Storjord.

Bodø is also connected to the national railroad grid as the northern end, and a large hub airport with 2794 meter runway is located only 3 km south of the center of the town.

## **Narvik**

Narvik is an important loading port for iron ore from Sweden and a distribution center for goods between South- and North Norway. The town is connected to the European railroad grid via Sweden (no connection to the national grid). In 2008 this railroad distributed 50.000 TEU from Oslo to Narvik, but the present terminal has capacity to double that number.<sup>131</sup>

Measured by handled volume, Narvik is without comparison the largest port in North Norway. Though, nearly all is outbound dry bulk (iron ore) for the export market. There are nearly no container traffic over the port.<sup>132</sup>

There is an initiative to develop Narvik as a cargo hub for containers from USA to Central Asia, the NEW-project. Here, goods should arrive to Narvik by ship over the Atlantic and be distributed further by train, using the Swedish, Finish and Russian railroad grid. This initiative has been supported by the International Union of Railways (UIC) and is included in the national transport plan 2010-2019.<sup>133</sup>

There are 13 quays in and around Port of Narvik. Most of them are not suitable for handling larger vessels due to shallow water.

Port of Narvik is aiming to secure and develop the position as logistic hub on the North Calotte. The strategy to reach that goal includes:

1. Development of container terminal and to establish Narvik as a hub for container transport
2. Strengthening of the efforts within port related business development

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<sup>129</sup> Port of Bodø KF, Strategic Plan, 29 January 2009.

<sup>130</sup> Port Director Ingvar M. Mathisen, 26 October 2011.

<sup>131</sup> NTP 2014-2023 Effektive godsknutepunkter, p. 87

<sup>132</sup> SSB Havnestatistikk 2010.

<sup>133</sup> NTP 2010-2019, p. 132.

3. Acquiring more land for future infrastructure, quays and port related business development.<sup>134</sup>

**Table 11: Cargo quays in Narvik<sup>135</sup>**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Max capacity (tdw)	Area (m2)	Remarks
Nordkaia	83	18	4-5,5	95	2400	900	General cargo
Pir 1	140	16	5-6/ 7-8	135	9000	1500	Cargo vessels, tourism
Pir 2	85/ 60+35	27	4-5/ 4	75	3000	1200	Smaller vessels, limited space
Fagerneskaia	230+50	33	15	270	13000	1000 0	Container quay
Vassvikkaia	68	8	2-8,5	50	400	550	
Rombaksbotn	13	7,5	3,5	25	150	50	
LKAB Ore Berth 5	208	12	26	300	240000	2500	Private quay
LKAB Bulk Pier 3 & 4	214	16	13-11	190	52000	3000	Private quay

Connected infrastructure:

Besides the railroad connection via Sweden, Narvik is linked to the European road grid by E6 to the south and E10 to Sweden. There is a STOLport with 799 m runway located 2 km from the center of the town, and the regional Narvik/Harstad hub airport Evenes, with 2808 meter runway, is located 79 km north of the town.

## Harstad

Port of Harstad is a multipurpose port with increasing importance as center for service and supplies for offshore petroleum activities in the region with ambitions to be a hub for petroleum activities in the northern Norwegian Sea..

The cargo volume handled by the port is relatively low; only Honningsvåg has less volume among the North Norwegian hub ports, and Harstad had a 13% decrease in 2010 compared with 2004.<sup>136</sup>

**Table 12: Cargo quays in Harstad**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
Kai I, Harstad sentrum	123	10	5-11,5	125	1230	
Kai II, Harstad sentrum	76	10	2-8,4	75	760	
Kai III, Harstad sentrum	51	12	2-6,8	50	610	
Kai IV, Harstad sentrum	97	12	2-10,3	120	610	
Larsneset, terminal 1, Harstad sentrum	215	19	6,6-10	210	4300	ISPS-approved
SST 3 (Basekaia), Stangnes Syd	60	18	8,5-10	80	120	ISPS-approved.
SST 2 Stangnes terminal, Stangnes Syd	120	10	12-13	180	1200	ISPS-approved.
SST 1 Felleskjøpkaia, Stangnes Syd	32	10	8-10	90	320	ISPS-approved.
Rødskjær	43	10	5,5-7	60	3160	Planning ISPS

<sup>134</sup> Narvik Havn KF: Strategiplan 2009-2015 (vedtatt i havnestyret 18. februar 2009), s. 6-7..

<sup>135</sup> Havnedirektør Rune Johan Arnøy, 17 November 2011.

<sup>136</sup> SSB Havnestatistikk 2010, tab. 439.

At Stangnes Syd (SST 1-3) the weight limit is 140 t/m. The quays are connected to areas with good space for short term or long term storage of all kinds of cargos/goods.

Kai I-IV have only max carrying weight 1,5 t/m, Rødskjær max 3 t/m and Larsenet, terminal 1 max 4 t/m.<sup>137</sup>

Connected infrastructure:

Harstad is connected to the European road grid by E10. The regional Narvik/Harstad hub airport Evenes, with 2808 meter runway, is located 45 km from the town. There is no railroad connection.

## Tromsø

Port of Tromsø is the largest and best equipped port in North-Norway. It has port areas in the center of the town (passenger traffic, fishing and leisure), at Breivika port and industrial area, 3 km north of the center, and at Tønsnes port and industrial area at Grøtsund, 10 km north of Tromsø town (under construction as port for oil & gas related activities).<sup>138</sup>

Tromsø has a developed infrastructure, and the port areas have good locations for outwards/inwards hinterland transport.

Breivika port terminal is the most central container and general cargo terminal in Tromsø, but the road access is considered as unsatisfactory and a barrier for further development of the port. A better road connection is estimated to cost NOK 300 million. Tønsnes port and industrial area will also need an improved road connection.<sup>139</sup>

Port of Tromsø is having national status as "particularly designated port" as the only in North-Norway.

**Table 13: Quays at Breivika port and industrial area:**<sup>140</sup>

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
Pier 20	194	10	7,5	194	1960	50t bollards quayside.
Ro-Ro	16	30	5,0	130	480	ISPS-approved. 75t bollards quayside
Pier 21	102	10	10,4		1500	ISPS-approved. 75t bollards quayside
Pier 22	102	10	10,4		1020	ISPS-approved. 75t bollards quayside
Pier 23	102	10	11,0		1020	ISPS-approved. 75t bollards quayside
Pier 24	104	20	11,5		2080	ISPS-approved. 1x250t, 75t bollards quayside.
Pier 25	150	20	11,5	330	3000	ISPS-approved. 3x250t, 75t bollards quayside.
Pier 21-24	410	10	10,4	420	4100	

Max capacity is depending on vessels draft/quay side bollards. The largest ships are at quay 21-14, example RMS "Queen Mary 2" (148 528 BRT) in June, 2010.

<sup>137</sup> Informasjon mottatt fra Harstad havn, 15 November 2011.

<sup>138</sup> [www.tromso.havn](http://www.tromso.havn)

<sup>139</sup> Kystverket: Stamnettutredning 2011, p. 77.

<sup>140</sup> Port of Tromsø, 29 November 2011.



On 20 February 2011 Tromsø municipality approved a regulation plan for Breivika, which will both expand the area and make a new four-lane main access road. The aim is that the main activities in Breivika should be transport, container terminal, industry, service activities and offices.

Tønsnes port and industrial area at Grøtnes will offer 470 000 m<sup>2</sup> space, with additional 350 000 m<sup>2</sup> available for development if required. Grøtnes will be a supplement to Breivika port area, and will have no or few limitations with respect to activities.

The strategy for development of Port of Tromsø is based on the government's High North Strategy and the status as particularly designated port; it is an important part of the implementation of a strategy to make Norway competitive in the international development of the north, and will develop infrastructure within the areas energy, environment and land/maritime based industry.<sup>141</sup>

The development of Breivika and Tønsnes with connected infrastructure is also anchored in the municipal plan of Tromsø as a strategic goal.<sup>142</sup>

Connected infrastructure:

Tromsø is connected to the European road grid by E6 to the south and E8 to Finland via Skibotn. There is a large hub airport with 2392 meter runway located only 3 km west of the center of the town. There is no railroad connection.

## **Alta**

As the future transport flow will be concentrated to fewer and larger terminals, to the hub ports and with larger degree of containerization, Port of Alta is aiming for a larger part of intermodal/multimodal cargo transport to be passing through Alta.

With the present location of the main port facilities, a large hub airport and connection to the European road grid through E6, Port of Alta considers itself prepared to meet future demands to logistics and transport solution. Though, developing the port as a regional logistic hub, and to attract outside suppliers industry, will require new seawards industrial areas, new multipurpose terminals and plans for further development of Bukta and other industrial areas.

The present Port Plan has an increased focus on coordination, increased petroleum activities in the Barents Sea, facilitating new industrial areas for supplier industry and business development within transport and other sectors. The strategies include development of a hub strategy and to facilitate for intermodal/multimodal cargo transports.<sup>143</sup>

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<sup>141</sup> [www.tromso.havn/forretningsstrategi/](http://www.tromso.havn/forretningsstrategi/)

<sup>142</sup> Tromsø kommune: Kommuneplan 2007-2018, pp. 13-14 and 23-24.

<sup>143</sup> Alta kommune: Havneplan 2009-2013, pp. 1-3.

**Table 14: Port of Alta** <sup>144</sup>

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max Vessel length (m)	Max capacity (tdw)	Area (m2)	Remarks
Terminalkaia, Bukta	169	60	10,5	250	70600	16300	ISPS-approved. Container area 2 500 m2, open storage cold store, warm store and dry store 2 900 m2
Bukta flytekai	100	10	10	100	3000		Speed boats, guest- and service quay
Marinekaia, Bukta	63		12		32000	1000	ISPS-approved
Finnmark gjenvinning AS, Bukta	10	8	5	50	1000		Private quay
Amtmannsnes, Bukta	61	45	7,5	60	2500		Private quay
Alta Skipsekspedisjon, Bossekop	85		4-5				ISPS-approved, private quay
Felleskaia, Bossekop	38	30	4,5	100	3500		ISPS-approved, private quay
Skiferterminalen, Bossekop	52	25	5,5	100	3500		ISPS-approved, private quay

Connected infrastructure:

Alta is connected to the European road grid by E6 and by Rv93 to Finland. The hub airport Alta has 2057 m runway and is located in the center of the town, very close to the port. There is no railroad connection.

## Hammerfest

Hammerfest municipality is aiming to be a hub for the economic development in the north with competitive infrastructure and logistics. The strategy for reaching this goal is to promote development of a strong local business- and competence environment.<sup>145</sup>

The overall objective with the port's development is to position it as an international fishery port and "/.../to be base port for the petroleum industry in the Barents Sea and a bridgehead for construction of petroleum installations on Russian continental shelf."<sup>146</sup>

Hammerfest has a variety of maritime transport; passenger traffic, general cargo, cruise/tourism, fishery, petroleum, offshore supplies, etc. The town is in need for new areas to handle growing traffic over center piers, and there is planned a new 160 meter pier at Fuglenes to be constructed in cooperation between Hammerfest municipality and Riber Salt AS. In addition, there is planned a filling towards the quay Bølgebryterkaia to obtain areas which can

<sup>144</sup> Informasjon mottatt fra Alta havn 15 November 2011.

<sup>145</sup> Hammerfest kommune: Strategisk næringsplan 2009-2018, kap. 2.3. Infrastruktur og logistikk.

<sup>146</sup> Hammerfest kommune: Årsrapport 2010, p. 132.

fill the functions presently being handled over the public traffic quay. The new quay is also intended for cruise ships with length up to 250-300 meters.<sup>147</sup>

There are also plans and options for development of several new areas for port and offshore base activities to the south of Hammerfest, from Rypefjord, which is included in the national maritime hub port grid, and southwards. But these are perspective projects.

**Table 15: Quays in Port of Hammerfest<sup>148</sup> - Fuglenes**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
Havnevesenet, Pier 23	160		7-9	200 ->	3000	ISPS-approved, linked with Rieber's quay
Rieber	68		5			
Bølgebryterkaia, front, Pier 8	70		5-12	80		
Pier 9, front	145		12-13	280	1500	ISPS-approved
Pier 10, inside	130		11-13	120	1500	ISPS-approved
Pier 11, inside	60		5-11	60		
Pier 12	150		4-6	70		

**Table 16: Center area**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
Dampskipskaia, Pier 1	175		8-12	220	3000	ISPS-approved
Pier 2	73		8-12	100		
Pier 3	46		4-8	50		
Floating quay, Pier 7	2x72		5-9	75	550	
Pier 4-6			3-6	40		Several small quays

**Table 17: Polarbase (Rypefjord)**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m2)	Remarks
Floating quays	120		7			ISPS-approved, reserved for tugs in Hammerfest
Well boat quay, Pier 72	30		6	60	1000	
Pier 71	295		10	200	5000	ISPS-approved, NOFO oil preparedness equipment
Pier 75	90		12	200 ->		Crane capacity 60 tons
Pier 76	80		13	200 ->		Bulk tanks

The supply base Polarbase's total area is 220 000 m2. There are 8 000 m2 indoor space, including a 400 m2 OCTG pipe inspection hall. It is possible to expand the area with 280 000 m2 by filling towards SW (Nordmannsbåen), but it is considered expensive due to water depth.

<sup>147</sup> Mulighetsstudie Hammerfest Havn, p. 28.

<sup>148</sup> Port of Hammerfest, 7 December 2011.

An expansion of Polarbase is also seen in perspective with a future development of new areas for base- and supply activities at nearby Leirvika and Straumsneset, which have potential for up to 1 350 000 m<sup>2</sup>. Excavated rock from these projects might also be used to expand Polarbase.<sup>149</sup>

Connected infrastructure:

Hammerfest is connected to the European road grid by Rv94, which connects with E6 at Skaidi. There is also a STOLport with 932 m runway located close to Melkøya. It has daily connections to Tromsø, Alta and Kirkenes. Due to problems with side-wind in the area, causing reduced regularity, there are plans to construct a new and larger STOLport. Hammerfest has no railroad connection.

## Honningsvåg

Sarnesfjorden at North Cape is today the only port for oil transshipment in North-Norway and has perspective to increase its importance with the future rise of export in the north. Today the transshipment includes condensate and some bunkering, but the expectations are that there will be lots of raw oil, bunkering and slop as well as intermediating in a few years. In longer perspective Honningsvåg also aims to be the location of a raw oil terminal for Russian raw oil to Asia via the Northern Sea Route.

As the future offshore petroleum exploitation in the High North will require a significant whole-year use of special ships and other ships depending on using suitable "weather windows" while navigating to the East of North Cape, Honningsvåg also aims to be one of the ports which can be used for waiting, preparedness and services for this traffic.<sup>150</sup> Port of North Cape and Porsanger has quays in Honningsvåg, Nordvågen, Kamøyvær, Gjesvær, Skarsvåg, Hamnbukt (Porsanger).

Connected infrastructure:

Honningsvåg is connected to the European road grid by E69 and (later) E6. A part of E69 is a toll road. There is also a STOLport with 840 m runway located 4.5 km north of the town. It has daily connections to the regional centers hub airports. There is no railroad connection.

**Table 18: Quays in hub port Honningsvåg**

Quays	Water front length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Area (m <sup>2</sup> )	Remarks
Pier 1	155	10	8	200	4500	ISPS-approved.
Pier 2	70	12	8	100	-	ISPS-approved.
Pier 3	125	12	9,5	290	-	ISPS-approved.
Pier Vest	120	7	8	120	1000	ISPS-approved.
Pier Syd	81	12	8	120	-	ISPS-approved.
Pier Øst	80	7	6	80	-	ISPS-approved. Part. wood.
R/S Pier	37	9	6	40	-	
Bølgebryter Vest	118	9	6	130	-	
Bølgebryter Øst	90	9	6	40	-	
Bølgebryter Nord	10	-	6	20	-	
Pier Nord	100	14	12	350	5000	
Ferry quay Storbukt	60		5-15		10000	

<sup>149</sup> Mulighetsstudie Hammerfest Havn, p. 35-38

<sup>150</sup> Strategiplan Nodkapp og Porsanger Havn IKS, p. 13.

North Cape municipality is in process of developing a plan for a 700 000 m<sup>2</sup> industrial area at Sarnesfjorden - Veindes, close to Honningsvåg. Here STS-operations are presently taking place, and there is already some infrastructure, such as roads, power lines and transformer with 25 mW free capacities. The plan, which is likely to be ready in 2012, includes construction of two quays with vessel capacity 300 meters and with 20 m waterfront depth.<sup>151</sup>

## Kirkenes

Kirkenes municipality is aiming to develop Port of Kirkenes as a national maritime hub for goods traded with Russia, and for base functions for Norwegian and Russian petroleum activities in the Barents Sea. The strategies to reach that target include development of larger areas for port activities, better infrastructure and more effective multimodal logistic.<sup>152</sup>

Kirkenes port has total 900 meter of quay fronts, of which 700 meters are concrete constructions. The quays are partially private and partially owned by the municipality.

There is more than 200 000 m<sup>2</sup> space connected to the port. The largest areas are located at the municipal quays at Prestøya.<sup>153</sup>

**Table 19: Cargo quays in Kirkenes<sup>154</sup>**

Quays	Waterfront length (m)	Surface width (m)	Depth (m)	Max vessel length (m)	Max capacity tdw	Area (m <sup>2</sup> )	Remarks
Dampskipskaia, Prestøya	104	11	6			20000	ISPS-approved. Cargo terminal 3000 m <sup>2</sup>
Industrikaia, Prestøya	120	11	9,3			20000	ISPS-approved. Cold store 4000 m <sup>3</sup>
Dypvannskaia, Kirkenes	94	11	13,8			51000	ISPS-approved. Public but managed by Kirkenes Base AS.
Sentrumskaia, Kirkenes	52	18	4,2				
Trekaia, Kirkenes	110	15	7				Private, wooden quay with low pressure
Gamle betongkai, Kirkenes	60	16,5	4,7				Private.
Nye betongkaia, Kirkenes	119	20	8,7				Private. Dry store 7000 m <sup>2</sup> nearby
Kimek-kaia	280		5-5,8			9000	Public/private. Dry store
Sydvaranger AS – export	195	5-35	14	303	100000		Private.
Sydvaranger AS – import	137	27	8,2	200	30000	3500	ISPS-approved, private. Dry store 4000 m <sup>2</sup> , space 80 000 m <sup>2</sup>
Sydvaranger AS, Taubåtkaia	80	9-22	4				Private, wooden landing
Fiskeri- og industrikai, Jakobsens	40	12	6,5				

<sup>151</sup> Port of North Cape, 28 November 2011.

<sup>152</sup> Kommuneplan for Sør-Varanger kommune, 2004-2016, p. 16.

<sup>153</sup> [www.kirkenesgateway.no/norsk/tjenester-kirkeneshavn.html](http://www.kirkenesgateway.no/norsk/tjenester-kirkeneshavn.html)

<sup>154</sup> Port of Kirkenes, 2 December 2011.

Kirkenes Base has two store houses with total 4000 m<sup>2</sup> located between Damskipskaia and Dypvannskaia, near the sea on the industrial area at Prestøya.

Sydvaranger AS is planning to expand its existing 400 meter deep-water quays to approximately 600 meter through the development of Sydvaranger Industrial Park (SMIP) in cooperation with Sør-Varanger municipality.<sup>155</sup> It includes 9000 m<sup>2</sup> area on Slambanken in Langfjorden, where 1000 m<sup>2</sup> will be developed as base/terminal to primarily support petroleum activities in the Barents Sea. The area might also be used for other maritime transport and logistics, and for general business activities.<sup>156</sup>

Kirkenes is located to the European road grid by E6 to the west and E105 through Russia to the east. There is also a hub airport with 1755 m runway 10 km west of the town. It has daily connections to Oslo, Alta and Tromsø. There is no railroad connection.

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<sup>155</sup> Mulighetsstudie for Kirkenes Havn, s. 31-32 og Sydvaranger AS – Industrial Area på [www.sydvaranger.no](http://www.sydvaranger.no)

<sup>156</sup> Forslag til planprogram – utvikling av Slambanken , Sør-Varanger kommune, pp. 3-7.

## **Transshipment**

Transshipment of petroleum products from ship to ship, to be administered by a trading facility in a north Norwegian port will not necessarily be depending on the port infrastructure at the trading facility as it can be done at any suitable location. Sarnes at Honningsvåg (STS-FSO) and SE of Sørøya (FSO) are locations approved by Norwegian Coastal Administration for transshipment, where there has also been developed an infrastructure for such purpose.

## **Offshore operations**

Offshore petroleum development in the Norwegian Sea and the Barents Sea represents several interesting development opportunities for ports in North Norway in terms of handling work force, supplies, construction elements, waste etc.

A study of petroleum activities and its actual and possible impact on activities and development of ports and infrastructure in the region is not included in the frame of this report. It should be included in an in-depth study considering port and logistics in a total perspective of the most relevant development factors in the High North.

## **Import by container**

RoRo-containers to Norway are mostly cargo from another European port, while LoLo are coming from both European and overseas ports. Overseas container goods arrive to the large European port hubs, like Rotterdam, Bremerhaven and Antwerpen, with ships carrying up to 12 000 TEU.<sup>157</sup>

Import of goods by containers is rising rapidly in Norway. In 2007 there were 217 000 containers imported over Norwegian ports. Moss is the fastest growing hub port for import of containers to Norway, while Oslo is the undisputed largest port for containers, with nearly 50% of the import. In 2007 nearly 50% of all containers to Norway came from Asia, which is a 30% growth from 1999.<sup>158</sup>

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<sup>157</sup> Econ Pöyri: Betydningen av effektive intermodale knutepunkter (report 2008-105), p. 23.

<sup>158</sup> TØI: Globaliseringens effekt på transportmiddel- og korridorvalg til og fra Norge (report 970-2008).

# Conclusions

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Access to parts of the cargo flow which is today passing north Norway by ships from Arctic Russia to the western market can be either by promoting the ports as storing- and transshipping hubs for cargoes from smaller ships, to be collected and transported further by larger ship in a more economical and environmental (CO<sub>2</sub>) friendly way; or it can be based on the principles of trading, where establishing ports as trading facilities may make them as commercial and competing actors on metals, petroleum, timber, seafood and other raw materials being sold daily by Russian companies and traders on the international market. This would facilitate upgrading of the existing port infrastructure to be developed as profitable transshipment- and storage hubs.

Russian export cargoes are being sold both in the spot market, on short term/single contracts or under long term frame contracts. A cargo owner is not necessary limited to one of these options, but might use all of them.

All national hub ports in North Norway are able to handle increased import/export, both with regards to safety of navigation, quay capacity and space. To handle any bottlenecks, the ports are also expected to cooperate – like Bodø, Hammerfest and Kirkenes have agreed to do.<sup>159</sup>

The creation of international maritime trading hub(s) in North Norway to deal with raw materials and other cargoes brought from the Russian North and delivered via the Northern Sea Route (NSR) will require a favorable presence of a number of key elements:

1. Good geographical location towards the market.
2. Good intermodal hubs – port infrastructure with adequate space and connected transport infrastructure.
3. Customs free areas for transit, transshipment and repacking.
4. Regulations that allow (if desired) good to be transported through hinterland to market outside Norway as transit goods, without being subject for taxations and fees.
5. General trading environment that attracts international trading companies.
6. Access to skilled labor.

Aiming at the NSR and the market for raw materials being exported from the Northern Russia, North Norway can offer several good hub ports already in process of development for handling of larger and more diversified types of cargo, connected by sea to good and safe sailing lanes and by land to large areas suitable for business- and business development and favorable transport infrastructure.

Custom free areas for transit, transshipment and repacking are already existing and considered as an advantage. It could be done in all ports based on customs warehouse type B and D.

Regulations that allow transit of goods without taxations and fees are also in force today and practiced daily on basis of the customs procedure EU8 and EX8.<sup>160</sup>

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<sup>159</sup> Port Director Ingvar M. Mathisen, Bodø, 26 October 2011.



The Norwegian commodity trader located in a European hub<sup>161</sup> expressed that one major reason why Norway was not attractive for international traders was the tax regime in force here. The level of taxes and financial regulations even made traders to leave the international trading hub London in favor of Geneva, Zug and other cities in Switzerland.

The cost level in Norway is also considered as a very high for international shipping operations. If favorable financial regulations are introduced to promote this type of business, the country might not be considered stable and predictable for business due to changing governments with different policies and approaches.<sup>162</sup>

Also, the geographical location of an international trading hub has a great impact on how it can operate and what roles it can play:

The importance of a hub like Rotterdam is based on the fact that all shipping routes in Europe go to Rotterdam.<sup>163</sup> There is also large traffic to Hamburg, Amsterdam, Antwerp etc., but there are no forwarders or transporters serving these ports but not Rotterdam. On the other side, there are plenty of forwarders serving only Rotterdam, but not the other port hubs. In addition comes that the port and the hinterland of Rotterdam is connected to a very well developed transport infrastructure to all the rest of Europe. That is why it is so important to be located here.

The access to significant and educated work force is another critical factor, which Rotterdam can offer. The port is not only a logistic center, but also a large industrial hub where large quantities of goods is being traded, repacked and processed every day.<sup>164</sup>

This requires a significant workforce, which is possible to mobilize e.g. through Russian-Norwegian agreements regarding Russian citizens access to the Norwegian labor market as well as utilization of the open labor market in EU.

The hinterland between the north Norwegian ports and central Europe, or other significantly big markets and industrial areas, represents another challenge for North Norway due to long distances; but this is only in case intermodal transport by vessel, truck and/or train is required.

Bodø and Narvik are the only ports connected to railroad in North Norway; Bodø to the long and relatively poor national grid giving access to the international grid only in the south, while Narvik has direct and shorter access to the better developed Swedish network, which also offers relatively short distance to the Finish and Russian grid. Connection to the Trans European Transport Network is a key element for efficient transport through the hinterland.

If a cargo owner discharging in a north Norwegian port will consider options for further transport of the goods, transport by road or rail will not offer any competitive solution for transit of larger volumes of goods through Norway (we are here disregarding the new project in Narvik, as it is based on a different scope).

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<sup>160</sup> [www.toll.no](http://www.toll.no)

<sup>161</sup> Anonymous source, information based on confidentiality.

<sup>162</sup> See previous footnote.

<sup>163</sup> Ellen Groeneveld, Managing Director of Elkem Maritime Center in Rotterdam, 17 November 2011.

<sup>164</sup> See previous footnote.

The idea of creating a maritime trading facility in North Norway should therefore be focusing on transshipment and/or repacking based on one of the following models:

1. Facilities doing international trade of raw materials and other cargoes on location.
2. Storing and transshipping facilities based on international trading from other location in Norway or from abroad.
3. Developing one or more north Norwegian ports to transshipment and storage hubs in cooperation with international port operators, cargo owners and/or forwarders.

**Option No 1** seems likely to materialize only if the basis will be physical handling of cargo in North Norway while the most of the formal trade is taking place elsewhere, where there are established trade environment and mechanisms.

This is a very specialized business conducted in an adapted environment, which includes a concentration of traders. The independent traders as well as those working for specific companies are forming hubs in Switzerland, London, Singapore, Tokyo, etc. Trading resources not operating in these environments are usually located with the trading departments at the HQ of the commodity owners.

This is a situation North Norway share with key cargo hubs like Oslo and Gothenburg, and key international cargo hubs like Rotterdam, Antwerp and Hamburg: the formal trade does usually not take place where the physical cargo is being handled.

**Option No 2** represents an opportunity for north Norwegian ports and logistic hubs when a passing cargo changes ownership through the international trading chains and the fulfillment of the transaction requires the cargo to be unloaded or transshipped in port. If succeeding in attracting such operations to ports in North Norway, it could contribute to a significant increase in the local cash flow and create an important incentive.

The development of North Norwegian hub ports to international trading hubs could also include cooperation with international commodity traders having networks of approved warehouses spread around the world, forming basis for this type of operations. It could also aim on cooperating with key European hubs, like Port of Rotterdam, to attract them to establish departments or branches of their businesses in a new strategic area of North Europe.

This option will require further investigation which is beyond the financial frame of this limited study. It will have to rely on a model where significant volumes of the future raw materials being shipped from Northwest Russia to the West will be reloaded, preliminary stored and/or separated to be redistributed to several customers. This either due to the way the goods are being traded, or due to the necessity of using different size or types of vessels during the voyage.

**Option No 3** is similar to the previous, but focuses less on the element of operations based on international traders in favor of direct cooperation with producers of raw material (which in many cases do not sell their commodities through external traders and/or on the exchanges but directly to end-users), forwarders, ports etc. It might therefore be prospective on basis of practical requirements in the process of bringing cargo from A to B.

For Russian customers, the actual results of the ongoing efforts to modernize the Russian ports of Arkhangelsk, Belomorsk and Murmansk and to connect them with better road- and railroad infrastructure will have a direct effect on north Norway. Russia aims to modernize those ports as to handle the country's growing cargo flow with the future utilization of petroleum resources in the region, and to handle an expected heavy cargo flow via the Northern Sea Route. Russian traders and cargo owners naturally can be interested in shorten the "export leg" to the west.

Even if it is still difficult to predict how the traffic on the Northern Sea Route will develop, and what type/size of vessels eventually will be operating the distance, there is presently a general expectation a significant part of the cargo being transported here will arrive with smaller ships, and that there will be a need for storage and transshipping hubs in both ends of the Route. In addition, large Russian cargo owners, like Severstal, have at occasions been considering the use of ports in North Norway in their operations.

In an environment where north Norwegian ports will be in position to offer more efficient and financially more beneficial operations on behalf of Russian cargo owners, there are possibilities to transform ports into transshipment and storage hubs for Russian cargo owners in a way beneficial for both Russia and Norway. This will require a sort of binding agreements between the operators to secure a basis for the economy related to investments required, which can be done through joint investments and joint ownership.

Options No 2 and 3 are equally relevant. Identification of relevant foreign investors and partners as well as definition of specific ports based on specific requirements should be subject for a separate study, but taken into account an identified need for the North Norwegian transshipment hubs to serve Russian cargo flow, investors could also be found outside Russia: Given a significant increase in container transport and bulk passing North Cape in both directions, it would be relevant to discuss with major European ports, as Rotterdam, Amsterdam, Antwerp and Hamburg, creation of a satellite in North Norway.

Large international traders with close links to the Russian market should be considered. The energy trader Gunvor recently tried to purchase the Russian Government's 25 percent stake in Murmansk Trade Sea Port, but the deal did not materialize as the parties did not agree the price. Instead, Gunvor is now trying to be a part of the development of the new Lavna port terminal on the western shore of the Kola Bay, together with the coal exporters SDS-Coal and Kuzbassrazrezugol (KZRU).<sup>165</sup>

Also Finland has shown significant interest in reaching one of the northernmost Norwegian ports by construction of a railroad from Rovaniemi. This is to get direct access to the Arctic seas for both import/export and to ease the access to future industrial development projects for Finish industry. With a railroad constructed, Finland will also have an objective interest in developing ports in the north for both transshipping, storing, transit transport and, possibly, industrial hubs. Finish companies would also be potential co-owners of a port infrastructure, but this also needs further investigations.

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<sup>165</sup> Newsflash from the Netherlands Consulate in St Petersburg, 21 June 2011; Argus Media, 23 August 2011.